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DIESEL RAILWAY TRACTION

The May issue of this RAILWAY GAZETTE *Publication, illustrating and describing developments in Diesel Railway Traction, is now ready, price 2s.*

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THE RAILWAY GAZETTE
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Transport Bill's Third Reading

AFTER the farcical treatment which the Transport Bill received in Standing Committee, when, under the timetable insisted on by the Government, it was necessary to omit as many as 37 clauses and seven schedules from discussion of any sort, and to pass over many others in haste, it had been hoped, albeit not very confidently, that the Government might be prevailed on to give reasonable time for consideration of this measure during the Report stage. All efforts by the Opposition, however, failed to move the Government from the time allotted in the "guillotine" resolution which it had forced through the House before Easter. The first three days of this week were given to the Bill, and how inadequate this was, is clear from the fact that the Minister had tabled 176 more Government amendments (after inserting 245 Government amendments during the Committee stage), and new Opposition amendments exceeded 200. The Bill, therefore, which affects profoundly the commercial and private life of the whole nation, has been hurried through the House of Commons in a manner which has precluded it from receiving the consideration which, in normal times, would have been accorded a far less controversial measure. As we were going to press, the Bill was in the final hours of the Report stage.

* * * *

In Lords before Whitsun?

It is now expected that the Bill will receive its Third Reading next week and be sent to the House of Lords before Whitsuntide. It seems unlikely that the Upper House will insist on amendments to the Bill which would involve a crisis between the two chambers, but there is every reason for hoping that the peers will revise with especial care a measure which has been the subject of such scant courtesy and reasoned thought in the House of Commons. Among the amendments which were agreed during the Report stage was one brought forward by the Minister of Transport increasing the amount of compensation which might be made to local authorities in respect of their transport undertakings; the Minister also said that discussions were now proceeding with the Road Haulage Organisation on compensation clauses. The Government rejected all efforts by the Opposition to go to arbitration on compensation for the acquisition of the railways. Mr. Barnes, in saying that the suggestion was quite unacceptable that the Government was under an obligation to maintain the rate of interest established under private enterprise, added that the Government, if it had the will of the people behind it, could do anything it liked about services necessary for the whole of the community. In view of the omission of "C" licensees from the Bill, and the concessions on compensation to other interests, the Government may find the railways subject to the disabilities which compelled them to seek the "square deal" in 1938.

* * * *

Government's Production Campaign

The President of the Board of Trade has launched a large-scale production publicity campaign on behalf of the Government, based on the slogan: "We work or want." Posters, Press advertising, factory talks, display sets, wall charts, films, picture sets, and exhibitions all are to be used to bring home to the people of Great Britain the economic plight of the nation. The Federation of British Industries and the Trades Union Congress held discussions with the President of the Board of Trade after the issue of the recent White Paper, "The Economic Survey for 1947," and they are in agreement with the need for the present campaign. One of the basic causes for the present situation is recognised to be lack of coal, and on the additional production of coal would depend our economic future. Sir Stafford Cripps has appealed for an all-out effort and the co-operation of both sides of industry.

* * * *

Lord McGowan on Burdensome Controls

At a time when industry is being exhorted to increase production, Lord McGowan, Chairman of Imperial Chemical Industries, has drawn attention to the hampering effects of the great mass of controls under which industrialists still labour. In his statement, submitted with the report and accounts of I.C.I., he urges a lifting of all unnecessary controls

which hamper industry. He expresses concern at the effect of many of the controls in industry and suggests that the Government should review them all with a view to eliminating those in which the detailed work of administration is out of proportion to the benefits accruing. Lord McGowan said that the strain put on industry by the administrative measures which are necessary to comply with these controls is a serious burden. The work involved in digesting and issuing instructions for the observance of the large mass of legislation which has been, and is still being, passed, absorbs the time and energy of staff which might well be engaged on more productive work. In 1946 the gross manufacturing and trading proceeds of Imperial Chemical Industries amounted to over £118,000,000, and Lord McGowan speaks with the authority which comes from the conduct of large-scale business.

* * * *

British Railway Investment in Venezuela

The amount of British capital invested in Venezuela at the end of last year was £17,894,526, and although the return was £1,652,359, or an average rate of interest of 9·2 per cent., there was no less than £9,663,681 of capital which received no interest. The British investments in railways in Venezuela totalled £1,821,094, on which interest of £16,705 or 0·9 per cent. was received last year, when there was £1,487,082 of capital remunerated. The statistics relating to Venezuela, which are compiled by *The South American Journal*, include the ordinary and preference shares of the Bolivar Railway, and the ordinary shares of the La Guaira & Caracas Railway. The latter company, largely as the result of exchange profits, recently has been able to meet the debenture interest.

* * * *

Overseas Railway Traffics

Uruguay has been experiencing a period of reduced traffics, and although the North Western of Uruguay Railway showed an improvement of £994 in March, it is still £218 down on the aggregate from July 1 last year. The other British-owned systems are less favourably placed, aggregate results of the Central Uruguay being £86,842 down at April 12, and the corresponding decreases at the end of March on the Midland and Northern systems being £15,028 and £4,382 respectively. Argentine traffics improved, after preceding fluctuations, in the week ended April 12, and the trend was continued during the fortnight to April 19, except on the Buenos Ayres Great Southern, which lost ps. 33,000 in the second week. The company's net result for the fortnight, however, was a gain of ps. 273,000. Some figures for the week ended April 19 are compared below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific* ...	42	2,850	+443	100,927	+5,027
Buenos Ayres Great Southern*	42	3,809	−33	153,347	+2,798
Buenos Ayres Western* ...	42	1,488	+209	55,377	+4,817
Central Argentine*	42	3,161	+223	135,706	+3,208
		£	£	£	£
Canadian Pacific	16	1,431,000	+215,250	22,250,250	+679,250

* Traffic returns in thousands of pesos

Gross receipts of the C.P.R. have continued their recent improvements, and gained £443,500 in the fortnight under review.

* * * *

Steel Supply Problems

In reviewing the work of the Iron & Steel Board during the past six months, Sir Archibald Forbes, Chairman, stated on Monday that more than half the projects envisaged in the British Iron & Steel Federation plan for developing the industry—which had been accepted by the Board in relation to overall capacity—had been approved and work was now well under way in the majority of these projects. But for the shortage of coal, steel production in this country this year would have reached a record figure of over 13 million ingot tons, whereas actual production to the end of March was equivalent to a rate of under 11½ million tons, and although every effort was being made by imports to reach the estimated 15 million tons required, overseas demands in relation to current supplies operated to curtail the quantity available for purchase by this country. With regard to the priorities for steel supplies, which we commented on in our April 11 issue, Sir Archibald Forbes pointed out that the order of the six priorities given was not intended to imply preference for the particular industries referred to, but that all ranked equal. The pressure on industry in general to convert to oil burning has created difficulties in the supply of the necessary equipment. Present conversions to oil burning represent a saving in coal of 450,000 tons a year, and it is hoped that this figure will have increased to nearly 1,000,000 tons by the end of this year.

* * * *

Construction of Track in New Tube Tunnels

Clearances in tube tunnels are very restricted, and this feature makes it essential that the tracks should be laid in concrete so that clearances are maintained. The tube tunnels are themselves constructed of cast-iron or reinforced-concrete segments, generally six to the ring, and each ring measuring 1 ft. 8 in. wide. As the sleeper ends fit between the flanges of the segments, the sleepers are spaced at 3 ft. 4 in. intervals, excepting at joints, where the spacing is 1 ft. 10 in. approximately. Jarrah sleepers are used, 6 ft. 6 in. long × 10 in. × 5 in., with the ends chamfered to fit into the segment. The tunnelling contractors leave a concrete bottom in the tunnel, benched up at both sides to form supports for the sleeper bedding concrete. The adoption of 300-ft. welded rail as the standard length for use on London Transport railways made it necessary to devise a mechanical method of track laying in tube tunnels, as obviously a 300-ft. rail weighing nearly 4 tons cannot be manhandled from the rail train forward along the 12-ft. dia. tunnel with minimum clearance between the vehicles and the sides of the tube, and it would be extremely difficult to devise any cantilever arrangement to extend up to 360 ft. ahead of the train. The simple and effective method which had been devised by the London Transport permanent way engineers is briefly described and illustrated in this issue. Essentially, it amounts to the provision of a 750-ft. overhead runway suspended from brackets, fitted with rollers, from the top segment bolts. Along this runway the sleepers are transported and lowered, and then the 300-ft. rails similarly conveyed.

* * * *

Reducing Harmonics in Substation Feeders

Extension of main-line electrification appears likely to be rapid and widespread overseas, and the development of mercury-arc rectifiers suggests the decision to adopt d.c. operation from substations supplied with high-voltage a.c. But, for long-distance electrification overseas, there will not be usually any existing compact and suitable power supply systems available, such as the British grid, for feeding the substations. A separate and lengthy feeder system will, in general, be required, necessarily operating at times in light-load conditions. It is in those circumstances that there is a possibility of electrical trouble and interference with communication systems, because of the harmonics which occur normally in the current taken by 6-phase and 12-phase mercury-arc rectifiers. Accordingly, we must assess as highly important to our export prospects the development recently described at a meeting of the Rugby sub-centre of the Institution of Electrical Engineers. Dr. J. C. Read, of the British Thomson-Houston Co. Ltd., has evolved a method of using a small auxiliary rectifier in connection with the interphase transformers of a 12-phase rectifier, which reduces the current harmonics to the equivalent of those produced by a 24-phase set. This is an improvement which may well make a great contribution to the smooth operation of main-line systems overseas, without introducing any appreciable complication or additional cost.

* * * *

Recasting Chicago's Passenger Stations

Plans are under consideration for complete remodelling of the long-distance passenger terminals in the city of Chicago, estimated to cost $100 million for new passenger stations and up to $150 million if a corresponding improvement in freight handling is included also. At present there are four jointly-used main-line passenger stations—the Central, Dearborn, La Salle Street, and Grand Central terminals. The plan is that these should be reduced to two, for which four possible sites are under consideration. One project envisages the retention of the present La Salle Street Station as the suburban

portion of a new station at Polk Street, with 20 through tracks, and loop lines for reversing the trains. A second plan calls for the complete reconstruction of the present Dearborn Station, with 24 terminal tracks for long-distance and 6 for suburban trains. The third scheme contemplates expansion, on the site of the present Central Station at 12th Street and the lake front, to 22 tracks, partly through and partly terminal; the Illinois Central suburban lines on the west side of the station would be re-located. The fourth plan is for an entirely new station at Congress Street, with 24 main-line and 6 suburban tracks, all terminal. By the reconstruction, the exchange of sleeping cars and coaches between the various railways, now that long-distance services through Chicago are at last in operation, should be greatly facilitated.

* * * *

British Locomotive Builders' Markets and Competitors

BETWEEN the two wars the principal markets for British locomotives were India, South Africa, Argentina, and other South and Central American countries. As far back as 1913, India was the principal customer, when it accounted for nearly 34 per cent. of British manufacturers' total exports. At that time Argentina took 25 per cent., British Africa 11·4 per cent., and Australia 9·6 per cent. India remained the best customer until 1937, when British Africa took first place with 25·5 per cent. The importance of the African market increased until 1945, by which time it accounted for 61·7 per cent. of total locomotive exports. In 1946, however, India resumed its first place with 46·6 per cent., and 30·1 per cent. went to countries other than Argentina. The last-named remained a good customer in all pre-war years, but its proportion of the total tended to decline.

An analysis of locomotive exports is given in the survey* published recently by Political & Economic Planning, to which we referred in our April 4 issue. This shows that British India imported all its requirements of locomotives before the war of 1914-18, and the bulk of these came from Great Britain. Before 1939, competitors had secured a footing in the Indian market; chief of these was Germany, whose share was substantial in the last three years before the war. If no additions are made to the number of locomotives in use, it is estimated that, assuming the backlog of renewals which accumulated during the war to be in the region of 300, between 180 and 200 locomotives will be required yearly for the next five years. The principal danger to British trade does not arise from competition from outside India, but from increased Indian self-sufficiency. If India should prove able to produce 50 locomotives a year, about 130 to 150 locomotives would have to be imported each year during this period; thereafter, the import rate would drop to 100 or less if India's building capacity was increased.

Before the war, South Africa imported locomotives from Great Britain, the United States, and Germany in that order of importance. Assuming that the backlog of renewals will be maintained during the next five years at the rate of 60 locomotives a year, and that normal replacement demand is about 70 locomotives a year, total demand will amount to about 130 locomotives a year for the next five years, and drop to 60 to 80 thereafter. If it is assumed further that the market will be shared by Great Britain and the United States in the same ratio as during the war (3 to 2), Great Britain's share would be some 80 locomotives a year during the next five years, dropping to 50 when the normal replacement rate is resumed.

Australia used to import a high proportion of her requirements from Great Britain, but during the war turned almost entirely to the United States and Canada. Although this may have been due largely to strategic necessity, it is thought that the change may be permanent, and in any event it is believed that Australia is approaching self-sufficiency.

Argentina, in all probability, will have to import the greater part of its locomotive requirements for some time to come. The backlog of demand is very substantial, and it is believed that future purchases from Great Britain cannot be less than 25-30 locomotives a year during the next ten years, and may exceed this number if prosperity is maintained, and if there is no discrimination against imports from Great Britain. Other Latin American countries are likely to be fairly large importers during the next five or ten years, and it is believed that the ability to give speedy delivery will be a major factor in deciding whether contracts are placed with British or American manufacturers.

The Middle and Far Eastern markets may prove of some importance, especially Egypt and Turkey, and also Burma.

Early in 1945 the Locomotive Manufacturers' Association compiled estimates for export demand for British locomotives. The total rose from 265 in 1947 to a peak of 522 in 1949, dropping to 400 in 1951; thereafter, the total annual demand was estimated at 280-340. This estimate is regarded by P.E.P. as "very sober," and as doubtless taking into account the pre-war renewal rate of the various countries concerned, and not expecting these rates to be exceeded when wartime renewals have been met. It is possible that if world prosperity is maintained, the normal demand after 1951 may exceed the numbers expected.

Dealing with foreign locomotive building industries, the survey shows that in 1924, nearly two-thirds of the total value of exports from the seven chief countries came from Great Britain, the United States and Germany. From 1929 to 1938 these three countries accounted for about 90 per cent. of world exports in the following proportion: Great Britain, 54; Germany, 28; United States, 18. Before the depression Czechoslovakia and Sweden were the two producers next in order of importance, but since 1929 France and Belgium had taken their place.

Between 1925-1938 a rapid increase in exports of locomotive parts by Germany had caused considerable perturbation in Great Britain. German builders, it was argued, enjoyed a considerable advantage over their British competitors in that they were assured of a reasonably steady home demand which enabled them to quote low export prices apart from any subsidies they may have received. Exports to South Africa alone in the period 1927-1938 appear to have totalled 600 locomotives and 500 boilers, or about double British deliveries. Similarly, in the period 1930-1938 German exports to Latin America were about 300 locomotives, or eight times the U.S. exports to those countries.

The German locomotive industry in 1938 comprised ten firms with an estimated labour force of 12,000 to 16,000 workers, and an estimated output capacity of 650 to 800 locomotives a year. During the war, the industry was greatly expanded, and in 1945 it reached a peak output of 500 standardised "Kriegs-Lokomotive" type a month. The industry suffered a great deal of destruction towards the end of the war; five of the firms are located in the Russian Zone and it is possible that their equipment may be claimed as reparations. Potentially, the industry is still the greatest rival of the British; under the Potsdam Agreement output is restricted to about 50 per cent. of the 1938 figure, and on this basis the output of the industry would be barely sufficient to meet the requirements of the Reichsbahn for renewals at the pre-war rate.

The locomotive industry of the United States in 1938 comprised thirteen establishments, employing nearly 11,000 persons. Output was expanded rapidly after 1942, and the U.S. War Production Board's estimate of production for 1944 was as high as 4,000 locomotives. There is a considerable backlog of demand in the home market, and home sales are likely to reach a very high level during the next three years, unless there is a business recession. The yearly average of renewals by American railways in the ten years to the end of 1945 is estimated at 700 locomotives. Even at the rate of 1,000 main-line locomotives a year for the home market, the building capacity built up during the war would leave an export margin of 2,000-3,000 locomotives if the 1944 production rate were to be maintained. On the other hand, traditional unwillingness to incorporate detailed specifications of customers, and high prices, in the long run might turn the scales in favour of Great Britain.

The locomotive industry of Canada is of comparatively recent growth. In 1935 only four locomotives were manufactured, but by 1944 the figure had risen to 190. Exports increased considerably during 1945 and 1946, mainly to India, Belgium,

* "The Locomotive Building Industry." Published by P.E.P., 16, Queen Anne's Gate, London, S.W.1. Price 2s.

and France. In general the Canadian industry is organised to undertake large orders of standard types, and little effort is being made to secure those smaller orders of two to ten locomotives which were the mainstay of British exports between the wars. On the other hand, it is believed that Canada will be keenly interested in exporting its locomotives in the future, and therefore may be considered an important competitor.

Ex-neutral countries with a well-developed locomotive industry, such as Sweden and Switzerland, may be important competitors in the next five years. In the long run, however, Czechoslovakia and Poland will be greater rivals, particularly if they are able to maintain relatively low prices.

* * * *

Closer Co-operation of Railway Staff and Management

IN January last, the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association submitted proposals to the Minister of Transport for securing the closer co-operation of railway staff during the present difficulties, which arise because of the inability of the railways to obtain sufficient material to enable them to overtake the heavy wartime arrears of maintenance of rolling stock, permanent way, and so on. Further difficulties are being caused by the shortage of locomotive coal and the unsuitability of an appreciable proportion of that which is supplied. Also, the shortage of labour and building materials is affecting adversely many of the welfare schemes which both the railways and the staff desire put into operation. After consideration of these proposals by the Railway Executive Committee, and discussion with the union representatives, we understand that the following arrangements have been approved by the Minister for introduction forthwith.

As a first step, each divisional or district railway officer is to convene a meeting of the chairmen and secretaries of the local departmental committees under his jurisdiction. For many years, these committees have been part of the machinery for securing close contact between the managements and the men. He will explain that the meeting is called as the result of consideration between the Minister of Transport, the managements of the railway companies, and the trade unions with the object of securing the most effective collaboration with the staff in the present difficult situation, and from the point of view that it would be an advantage for the discussions to take place in a more comprehensive and wider sense than is afforded by individual local committees—hence the suggestion for bringing together the local committees over an area.

The employee representatives on the respective local departmental committees will then be given the opportunity of meeting among themselves, along with the area representatives of the sectional councils concerned and representatives of the three trade unions, when they would be able to discuss the difficulties in the area and submit their suggestions and proposals for solving them. These will be thoroughly explored by the railway officers.

After meetings of employees have been held on these lines, and their suggestions and proposals prepared, the railway concerned will arrange meetings on a divisional, district, or area basis which will be attended by the company's officers, two representatives of the company's side, and two of the employees' side of each local departmental committee, area representatives of the sectional councils, and, if desired, representatives of the three trade unions. It is suggested that, from the company's side and irrespective of the questions which may be raised by the representatives of the staff, the general subject of discussion should be the difficulties under which the railways are operating at present, with explanations by the railway officers as to the contributory factors and their suggestions as to the remedies to be applied, with indications as to the directions in which the staff can be of particular assistance in bringing about improvement.

It is intended that the general atmosphere of the meetings shall be one of taking the staff fully into confidence as to the difficulties to be overcome, and a readiness on the part of the company's officers to endeavour to meet the staff point of view in the necessary adjustments of working which may be required. Amongst the difficulties to be discussed will be absenteeism, its causes, and the steps to be taken to bring about an improvement; and also the reluctance of the staff to perform the additional duties necessitated by existing circumstances in the shape of overtime and Sunday duty. The progress of these discussions will be watched with considerable interest, as they may have an important effect on the future relationship of labour and management on the railways.

* * * *

Weight Reductions in American Rolling Stock

TWO recent American papers on weight reduction of railway rolling stock show the importance accorded to this subject at the present time. On December 5, 1946, Mr. P. W. Keifer, Chief Engineer, Motive Power & Rolling Stock, New York Central System, opened a discussion on weight reduction in passenger-car equipment and specialities at a session in New York of the Railroad Division of the American Society of Mechanical Engineers; and Mr. R. L. Rex, Railroad Mechanical Assistant, Air Reduction, New York, read a paper on welded freight cars before the Railroad Session of the American Welding Society at its annual meeting in November, 1946.

At the outset, Mr. Kiefer gave warning that mere weight reduction as such could be pursued too far, until a stage was reached at which the useful life would be shortened, whilst out-of-service time for repairs would be increased; furthermore, it must not be allowed to interfere with smooth and shock-free operation. Regarding initial costs, the high cost of modern coaches reduces the margin of return on investments in such equipment, even with cars making 250,000-300,000 miles annually, which is the sort of mileage which must be run at present costs if economic survival is to be ensured.

The accompanying table shows the progress made since the late 1920s. The American coach of 1945 is 6 ft. longer; contains tight-lock couplers with swinging supports and a complement of heavy metallic connectors; air conditioning and modern ventilating apparatus with correspondingly heavier generating equipment; much larger batteries; electric control devices; streamlining, including end closures and folding steps; more extensive lighting; and many other items. Notwithstanding these additions and the increased length, this coach is about 7½ per cent. lighter than the car of some two decades ago, as a result of the use of better materials and processes, accumulated experience, and better designing throughout. Thus, although the table shows the coach of the 1920s to have the greater seating capacity, the seats of the modern coach are of the *de luxe* revolving, reclining type. The striking reduction in body shell weight is due largely to improved high-tensile materials of construction and to better methods of fabrication.

Item	(1)	(2) Coach of late 1920s; carbon-steel riveted body (not air-conditioned)	(3) Coach of 1945; high-tensile low-alloy steel; welded, non-fluted body (air-conditioned)	(4) Percentage change; column (3) compared with column (2)
1	Complete coach, lb. ...	130,900	121,000	−7·5
2	Two four-wheeled bogies, complete, ready for service; 36-in. rolled steel wheels, lb.	34,000	39,500	+16·1
3	Body, completely equipped, lb.	96,900	81,500	−15·9
4	Equipment added to the body shell, lb.	40,300	50,600	+25·5
5	Body shell alone (item 3 less item 4), lb.	56,600	30,900	−45·4
6	Body equipment as percentage of complete body weight (item 4 ÷ item 3) × 100	41·6	62·0	+49·0
7	Coupled length, ft.	79	85	+7·6
8	Passenger seating capacity ...	84	56	−33·3

One of the difficulties of detailed analysis of the problem is lack of information on the weights of a large number of items, including running gear. The bogies, ready for service, are an example. By using alloy steel for the important castings; instead of, say, grade A cast steel, about 1,550 lb. weight can be saved per car (1·28 per cent. of the dry weight). This figure does not take into account, however, such items as clasp-brake rigging, brake cylinders and brake blocks, slack adjusters, piping, equalisers, shock absorbers, roller bearings and boxes, etc., totalling some 14,000 lb. or about 11·5 per cent. of the dry weight. Again, equipment other than that supplied to the bogies (item 6 in the table) is some 62 per cent. of the complete body weight, and comprises coupler equipment, windows

and fixtures, inside furnishing, heating installation, water supply, body foundation and air brake parts, electrical equipments, and air conditioning and ventilating apparatus. Each item in these lists should be studied in detail, with a careful analysis of the weights of the component parts, including (for each detail) separation of the construction materials necessary.

Much progress has been made, but more should be forthcoming: air compressors for air-conditioning batteries, and lighting generators all lend themselves to special studies with a view to weight reduction. Shortened schedules are being introduced in America, and, as speed means power, the value of having saved about 175-200 tons in a 15-coach train by using lighter rolling stock is not difficult to realise.

Mr. Rex's paper emphasises the advantages of low-alloy high-strength steels and welded construction in the production of freight vehicles having less weight and higher capacity. Less weight for a given strength or more strength for a given weight (or an intermediate result between the two) are the possibilities to be aimed at. Welding is valuable, as it eliminates rivets and their attendant lap joints; moreover, it favours a simpler and less weight-consuming design. Although the possibilities of alumimium alloys and stainless steels as materials for freight vehicles are not overlooked, emphasis is placed on the low-alloy steels, as they have been used more extensively.

Such steels, used in connection with welded construction, allowed a reduction in weight of 5-7 tons in each vehicle. Thus, greater capacity could be achieved for a given load hauled; or fewer cars could be employed to move a given tonnage; or less fuel could be used in hauling a train of given length. In any combination, such advantages resulted in a bigger net operating income. The present-day limitation to further reduction in weight lies in standard freight-car brake equipment, since the total weight, if lowered beyond a certain point, would not fulfil the requirements for braking ratios for loaded cars. The "empty-and-load brake" offered a solution, but it was high in first costs, and had certain functional limitations. The new "variable-load brake" now being developed should, when available, enable present braking restrictions to be removed.

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Ceylon Government Railway

THE report of the Ceylon Government Railway for the year ended September 30, 1945, shows an increase of 14·58 per cent. in gross receipts from all sources, which totalled Rs. 59,592,041. Expenditure, at Rs. 39,746,454, was up by Rs. 7,528,125, principally on account of the higher price of coal and other commodities, payment of increased rates for labour, and increased war allowances. After the payment of interest and annuities, the sum of Rs. 3,000,000 was transferred to deferred maintenance account, and the balance of Rs. 13,002,763 went to the general revenue of the island to meet arrears of interest and annuities. A further allocation of Rs. 53.190, realised by the sale of assets, was credited to general revenue during the year, leaving the balance due to the Government on September 30, 1945, at Rs. 51,915,407. Some financial and operating results for the year are compared below:—

	1943–44 Rs.	1944–45 Rs.
Passenger train receipts	26,252,471	30,517,053
Goods & livestock	23,757,360	26,541,427
Miscellaneous...	2,000,941	2,533,561
Gross receipts	52,010,772	59,592,041
Expenditure	32,218,329	39,746,454
Net revenue...	19,792,443	19,845,587

Passenger and goods traffic both produced higher receipts, the increase in passenger earnings being 14·48 per cent., and in goods and livestock 10·49 per cent. The number of passenger journeys (excluding season tickets) was 24,920,215, compared with 20,933,180 in the previous year. Goods tonnage increased from 1,564,792 to 1,701,146, and this traffic was conveyed for a goods mileage of 1,986,131, as compared with 1,994,727. The number of goods wagons in service during the year was 2,205, an increase of 22, and the tonnage conveyed per wagon increased from 605·38 to 687·27. The total mileage run by passenger trains was 1,768,841, as against 1,566,122, and the proportion of non-paying mileage fell from 923 to 402. Of the total engine-mileage of 6,363,837, 70,229 miles were run by the administration's three diesel trains. Steam railcars, of which 19 are in operation, ran 287,762 miles, a decrease of 29,811 miles.

The heavy traffic handled, and the shortage of motive power, resulted in a deterioration in the percentage of trains and railcars running to time. This figure fell from 60 per cent. to 55 per cent. Six new "B1" class 4-6-0 engines were put into traffic. Some relief in the goods rolling stock position was obtained by procuring wagons on loan from Indian railways. Expenditure on new works by the civil engineering branch totalled Rs. 1,682,517, the works comprising tunnel relining, a minor extension, and some relaying with heavier rails. Progress was made, also, with the programme of strengthening bridges. The route-mileage of the system on September 30, 1945, comprised 806 miles 65 ch. of broad (5-ft. 6-in.) gauge, and 105 miles 76 ch. of narrow (2-ft. 6-in.) gauge, a total of 912 miles 64 ch. An account of the development of the Ceylon Government Railway from the opening of the first section in 1865 appeared in our March 22, 1946 issue, and some notes on war traffic handled by the railway were published in our issue of March 8 in the same year.

* * * *

Transport: Its History and Economics

AT the end of February, Sir Isaac Pitman & Sons Ltd. published a sixth (abridged) edition of "The History and Economics of Transport"* by the late Professor A. W. Kirkaldy and Mr. A. Dudley Evans. The abridgment is the work of Mr. Dudley Evans, and presumably was completed some time ago, as the preface opens with the statement that "transport problems do not provoke so much public discussion as they did a generation ago, when railway rates and the classification of goods and merchandise engendered so much heat and widespread protest." That was not true of 1946, when the Government's intention to nationalise transport was debated keenly, and this year the controversy over the Transport Bill has excited a wider interest than the old disputes between railways and traders about the basis of freight rates.

Recent developments detract considerably from the value of the book. The chapters on rates and fares are concerned largely with ancient history. Innovations such as "agreed charges" and the establishment of the Road-Rail Central Conference are not mentioned. The chapter on State railways also has been thrown out of date by the introduction of the Transport Bill. One third of the book is devoted to sections on Canal Economics, Shipping and Ocean Transport, and Civil Aviation. These contain much useful information, but do not compensate for the absence of a section dealing with road transport, the agency which has created an upheaval in transport arrangements, especially since the 1914-18 war, and is likely to cause further changes after the second world war.

Mr. Dudley Evans is anxious to assist business men to understand transport problems, but the analysis of conditions given in his pages is hardly sufficient to give a clear picture of the present situation. He has, for example, a table of traffic originating on canals year by year from 1921 to 1938. These figures show little variation in the volume of movement. No hint is furnished that the crucial stage in canal transport lay between 1905, when 42,000,000 tons were carried, and 1921, when the traffic had shrunk to 12,000,000 tons. During that period the road haulage industry was growing in scope and efficiency. The question now is whether canals have reached the end of their tether, so that any future increase in transport demands can be met adequately by road and rail conveyance.

We are passing through a time of transition, and, until the exact terms of the Transport Act are settled, it seems superfluous either to repeat the story of past happenings or to speculate about possibilities. A new transport policy is being evolved before our eyes. The important thing at the moment is to watch the tendencies that are at work and to try to guide the trend of development in the direction that best suits the public interest. Though great pains have been taken in preparing the volume before us, it falls short of supplying the material needed to influence the course of events during the emergency that is here. We still lack a treatise bringing our transport economics up to 1947 requirements.

* "Transport: Its History and Economics." By A. Dudley Evans. London: Sir Isaac Pitman & Sons Ltd. Price 10s. 6d.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

American Passenger Equipment

Cambridge. April 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Does the article on "New Lightweight Coaches in U.S.A.," published on April 25, not give a decisive answer to Mr. W. R. D. Manning's letter which appeared in your April 11 issue? The American coach, fitted with reclining seats, is 85 ft. long and 10 ft. wide—the "16 ft. over side posts" in your article must be an error. The coach carries 48 persons, four aside.

A standard L.M.S.R. coach, 60 ft. long and 9 ft. wide, could not hold more than 30 seats of the American pattern, three aside. This means that 12 of the 42 seats at present provided in compartments would be lost and the railway would be hauling a ton of tare weight for every passenger. In existing circumstances our railways cannot reduce their revenue per coach and increase operating costs, while many of their passengers prefer the comparative privacy of a compartment to the publicity of an open coach.

Yours faithfully,
EAST ANGLIAN

Lime-Soda and Allied Water Treatment Processes for Railways

4, Farleigh Dene Crescent,
Addington, Surrey. April 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In his paper to the Institution of Locomotive Engineers on "The Application of Base-Exchange Water Softeners to Railways," summarised in your issue of February 14, Mr. A. J. R. Walter implied that the lime-soda process was unsuitable for railways. Indeed, he went so far as to state that "the system is economically impossible on a 1,000-mile stretch of main line with 30 or more pumping plants and as many lime-soda plants."

The writer has had considerable experience of the lime-soda and allied chemical precipitation methods of water treatment (frequently referred to as wayside treatment) on railways in many parts of the world. This has convinced him that the lime-soda process is capable of giving results and economies at least equal to those possible by the alternative base-exchange method.

In the subsequent discussion, Mr. E. S. Cox rightly drew attention to the fact that the lime-soda process was the one generally used in the U.S.A. It may interest your readers to learn that a survey of the American railways made a few years ago, disclosed no fewer than 792 lime-soda plants and 1,563 wayside plants in operation, as compared with only 69 base exchange.

Many American railways have published details of the highly satisfactory results thus achieved. For example, a paper by T. W. Hislop, of the New York Central, read at the annual meeting in 1944 of the American Society of Mechanical Engineers, disclosed that his company was saving more than $2½ million a year by the very methods Mr. Walter deprecates. It is worth noting that this railway operates 253 water treatment plants, of which 34 are lime-soda softeners, and 219 wayside treatment units. Moreover, it covers over 11,000 miles of track. This surely disposes of any question about the suitability of lime-soda treatment for a large railway system.

In this country, there are instances on record of railway locomotives supplied with lime-soda softened water being operated up to 6-10,000 miles without washing out. If this is not everyday practice, it is only because few, if any, British locomotives are supplied as yet with 100 per cent. correctly treated water. The railway companies are determined to overcome this. One has experimented recently with the base-exchange process, but is now understood to have stopped using the two experimental plants.

Mr. Walter hardly could claim that the base-exchange process would give good results if, say, about 60 per cent. treated and 40 per cent. untreated water were supplied to locomotives, as happens on many sections of British railways.

Lastly, it would be interesting to know if priming is prevented definitely by the base-exchange process. Recent information appears to show that base-exchange treated water sometimes has proved incapable of allowing higher dissolved salts to be carried in the boiler than is possible with lime-soda softened water. In fact, several railways that soften their supplies by the base-exchange method are using also anti-foaming compounds—hardly an indication that priming is eliminated.

Space precludes a full discussion of the merits of the lime-soda process as compared with those of base exchange, but prospective users would be well advised to investigate both before selecting purely base-exchange softeners.

Yours faithfully,
C. A. STEAD

Guide to Economics

Little Abington,
Cambridge. April 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The letter from Mr. A. Vigil, of Argentina, in your issue of April 25, in which he "corrects" your phrase, "When someone stops earning—someone stops buying," substituting his version, "When someone stops earning—someone stops *eating*," is woefully incorrect and inapplicable to post-war Britain.

The true situation in this country is that when someone stops earning, someone does *not* stop eating; and that is the root of all our troubles. "By the sweat of his brow shall man eat bread" has been abrogated in Britain, and nothing else will ever replace it whilst human nature remains what it has always been.

I am, Sir,
P. C. DEWHURST

Publications Received

Locomotive Engineers of the G.W.R. By Ben Webb. London: Ian Allan Limited, 282, Vauxhall Bridge Road, S.W.1. 7¼ in. × 5 in. 31 pp. Fully illustrated. Paper covers. Price 1s. 6d. net.—Throughout its history of more than 100 years, the G.W.R. has been served by only six locomotive engineers, each of whom has preserved the Swindon tradition by succeeding his former chief. This book gives a brief biographical sketch of Gooch, Armstrong, Dean, Churchward, Collett, and Mr. F. W. Hawksworth, the present Chief Mechanical Engineer, followed by details of their chief designs. The illustrations include portraits of the six engineers, and a representative selection of G.W.R. locomotives from the earliest days of the company.

Analysis of Railroad Operations. By Joseph L. White. New York 7, U.S.A.: Simmons-Boardman Publishing Corporation, 30, Church Street. 9¼ in. × 6 in. × 1 in. 306 pp. Illustrated. Price $5.00 net.—The second edition of this well-known manual provides the railway accountant or statistician with a clear idea of operating problems as seen by those who have to deal with them. The subject matter deals with the accounting classifications established for the United States railways by the Interstate Commerce Commission. Numerous charts and tables present the author's analysis in a clear and precise manner that can be understood readily by those without training in accountancy.

G.W.R. Holiday Haunts, 1947. Great Western Railway, Paddington Station. 8½ in. × 5½ in. 688 pp. Fully illustrated. Paper covers. Price 6d.—This book, which ceased to be published during the war, makes a welcome reappearance this year, when it is especially necessary to holiday-makers in view of the changes that have occurred in recent years. The book has six sections covering the principal holiday areas served by the G.W.R., and each is preceded by alternate green and sepia photogravure sections. There are over 3,000 addresses of holiday accommodation, and a separate sheet of G.W.R. maps is included.

Southern Railway Hints for Holidays, 1947. The Southern Railway, Waterloo Station. 8¼ in. × 5½ in. 368 pp. Fully illustrated. Paper covers. Price 1s.—For those contemplating holidays in the South of England or the Channel Islands, this guide offers a wide range of information, covering the situation of the various resorts, local history, climate, parks, beaches, entertainments, and many other such aspects of holiday-making. There are twelve maps, numerous illustrations, and extensive details of accommodation. A feature of this edition is the inclusion of a number of colour plates, depicting various landscapes in Southern England, which add to the attraction of this valuable book.

Holidays by L.M.S., 1947. London Midland & Scottish Railway, Euston, N.W.1. 11 in. × 8 in. 336 pp. Fully illustrated. Paper covers. Price 1s.—The L.M.S.R. holiday guide reappears in a new form; the layout and shape of the book have been altered, and the result is attractive as well as making for ease of reference. The book is divided into three sections, England and Wales, Scotland, and Ireland; the illustrations and details of accommodation at the holiday resorts appear together, and are arranged in alphabetical order under each respective section. The separate descriptive matter is not included this year; however, there are printed with the illustrations notes which show the main attractions at the various resorts. An index to place names is included, and a map of the L.M.S.R. and its connections is on the back cover.

The Scrap Heap

Locomotive Whistles

Reports of a day-long debate in the Legislature of Georgia, U.S.A., over a proposed change in the note of locomotive whistles, reads strangely over here where we are accustomed to a more or less standard screech, but in America different lines have their own special whistle signals, and some have a variety, designed to warn rather than please the ear.

Some years ago the Florida East Coast Railway, having no distinctive whistle, and deciding to adopt one, put the matter to a public vote. With commendable consideration it equipped a locomotive with six different types of whistle and sent it to toot them all in succession in all the principal towns along the route, in order that the citizens might choose the one they liked best.

Ninety per cent. of the votes favoured one type, which accordingly was fitted to all locomotives in the company's service.—*From "The Scotsman."*

Mid-week Travel

167, Stapleton Hall Road,
London, N.4. April 26

To the Editor of The Railway Gazette

Sir,—I have just read the advertisement in *Punch* asking us to travel mid-week. As this seems to be an age of couplets, may I suggest this one for advertisement:—

A mid-week train
Relieves the strain!

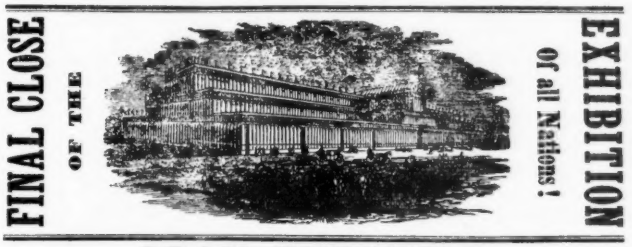
Yours truly,
(Miss) L. Wilcox

* * *

Civil Service Accommodation

Some details of abnormal Civil service accommodation in the London area were given in a recent Parliamentary answer which stated that Government departments hold on requisition in the London civil defence region 40 hotels, 854 large houses, 409 small houses and 1,479 flats. Another answer stated that in the present year permanent and temporary office space will be built for Government departments in London to the extent of 190,000 sq. ft. and 428,000 sq. ft. respectively (plus 70,000 and 2,380,000 sq. ft. elsewhere than in London).

CHEAP TRAINS FOR THE WORKING CLASSES!!!



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TO
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FOR
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Special Express Trains are appointed to leave the London and North Western Railway Station, Coventry, on the Mornings of

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October 7th, 8th, and 9th, at Seven o'Clock each Morning.

THIRD CLASS, 6s. 6d.; FIRST, 19s.

CHILDREN UNDER TWELVE YEARS OF AGE, HALF-PRICE.

The Return Trains will leave the Euston Station, Euston Square, London, at Eleven o'Clock precisely, on the Mornings of

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And at a Quarter before Six on the Mornings of

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☞ Tickets must be taken before Nine o'Clock the previous Evening.

Tickets, Bills, and every information may be obtained from Mr. JOSEPH TOMKINSON, Printer, Bookseller, & Stationer, High Street, Coventry.

H. R. MARCUS, Manager and Conductor,
10, LEIGH STREET, LIVERPOOL.

J. TOMKINSON, PRINTER, HIGH-STREET, COVENTRY.

Handbill of cheap excursions from Coventry to London for the closing days of the Great Exhibition of 1851. *Day excursions are not at present operating from Coventry to London. In* 1939 *day excursions at* 11*s. and half-day excursions at* 5*s.* 9*d., were in operation. Today, reduced fares are applicable, subject to pre-arrangement, to organised parties (minimum eight adults) travelling for day outings, and for such the Coventry to London third class fare is* 16*s.* 5*d.*

Premature Departure

"I say, foreman, I've signalled this train to start and it's got no engine yet!"
"Good gracious! Give it the signal to stop again, instantly"

[From "Ferroviarios," Madrid

* * *

Where the Money Goes

Out of every £1 which the people of this country spend on goods and services, 5s. is spent on food, 2s. 5d. on alcoholic drinks, 2s. on tobacco, 1s. 10d. on clothing and footwear, 1s. 9½d. on rent and rates, 11d. on fuel and light, 10d. on travel, 6½d. on entertainment, and 3½d. on reading-matter.—*Mr. R. F. Rattray, 26, Queen Edith's Way, Cambridge, in a letter to "The Times."*

* * *

Pugnacious Navvies

On Sunday morning last, during the time of religious worship, a disgraceful disturbance was made in this town by some of the men employed on the railway works at Church-end. The "navvies," having drank to excess, quarrelled, and then agreed to fight it out. This brought a multitude of persons together, who appeared to look on the little innovation upon the quietude of Buckingham as merely the first of a series of ruffianly displays to come off during the projects of the line. The well-disposed inhabitants, however, repudiate such doings, and think the municipal authorities should interfere. —*Bucks Gazette.*

From "The Railway Times," May 15, 1847.

* * *

100 YEARS AGO

From The Railway Times, *May* 1, 1847

Buckinghamshire Railway.—The Lord Chancellor having virtually decided that the Birmingham and Oxford Junction shall *not* pass into the hands of the North-Western Company, the Buckinghamshire Railway is rendered of the least possible value. The Birmingham and Oxford Junction and the Bucks *married*, might have been a desirable union, but my Lord has "forbid the bands." The union is not to be. The law allows it *not*, and the Court awards it *not*. So much for the Buckinghams*hire*. The shareholders are therefore requested to consider whether it would not be better to call a meeting to discuss the propriety of proceeding slowly with the works in the present state of the money market. A heavy call will be made in June or July. The traffic by the Oxford Junction will pass *south* by the Great Western, and the local traffic will be *nil*.

Let any shareholder examine the map for himself; and as the line only goes from Tring to Brackley, and thence to Banbury, IF the Act be obtained, it will be apparent that, as the superfluous traffic of the North-Western is *not* to pass over the Birmingham and Oxford Junction, it *cannot* pass over the Bucks.

B.—HOLDER OF TWENTY SHARES.

London, April 28, 1847.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Natal South Coast Line

A bridge-building and track alteration programme now in progress on the Natal South Coast line will permit the running of more and faster trains. The traffic on this line, which serves holiday resorts, has been growing steadily, and the railways plan to improve the suburban service, which terminates at Umkomaas, 31 miles from Durban; and to provide a better service for the holiday and industrial traffic farther south.

Many trains which now are delayed by congestion on the Durban—Rossburgh section, will have a clear run when the track is quadrupled. An additional track between Merebank and Umbogintwini, to carry the heavy goods traffic originating in this area, also will assist towards the introduction of faster and more convenient train services.

Preparing for Larger Locomotives

The use of larger engines must await the conversion of the existing pile bridges into reinforced concrete structures. Completion of the new Umkomaas Bridge has been held up by the shortage of cement, and the work is expected to take another two years.

Another 19 pile structures remain to be converted into reinforced concrete bridges before more powerful engines can be operated between Umkomaas and Port Shepstone. Surveys are in hand beyond Kelso, and plans provide for the conversion of five bridges this year. The new bridges will be built nearer the sea in order to relieve the existing curvature. This will reduce mileage and allow faster speeds.

Rolling Stock and Locomotives

The railways have accepted the tender of a British firm for 100 branch line engines of a new type. The engines will replace the old "7th" and "8th" class engines now in use on branch lines, and will be the heaviest locomotives running on a 45-lb. rail. They will be built to the specifications of the Chief Mechanical Engineer.

The locomotive programme for the next five years provides for 343 new engines. Orders have been placed already for 100 "15F" class main-line engines; 50 of the "19D" class, and 125 of the "24" class. Another 12 engines, Class "S-1," are being built in the mechanical workshops. Some of the "15F" class engines, which are being built by the North British Locomotive Co. Ltd., are on their way out already and the delivery programme provides for further shipments at the rate of eight a month.

Goods and passenger rolling stock is being replenished as rapidly as possible. The new programme will raise the number of 3-ft. 6-in. gauge passenger vehicles to nearly 6,000. There are at present more than 62,000 goods vehicles in service, and these will be increased by 28,000 within the next five years.

New "Blue Train" Services

The winter timetable, which begins to operate on June 2, provides for the running of a new "Blue Train" between Johannesburg and Durban. It will leave Johannesburg at 6 p.m. on Fridays, and Durban at 6 p.m. on Sundays. This train will have the same air-conditioned stock as used on the "Blue Train" to Cape Town, and will provide a service identical in amenities. One of its objects is to enable people from Johannesburg to spend a long week-end in Durban. The daily fast train to and from Durban will leave Johannesburg and Durban at 4.45 p.m. instead of 3.40 p.m., and will be speeded up in both directions so as to arrive at 9 a.m. at Durban, and 9.10 a.m. at Johannesburg.

Durban—Cape Town via Free State

The bi-weekly train between Durban and Cape Town, *via* the Free State, will operate as an express train from May 1, and will be painted in a distinctive brown and cream livery. It will leave Durban at 4 p.m. on Fridays and Sundays, arriving in Cape Town about 11.30 a.m. on Sundays and Tuesdays. In the other direction, the train will leave Cape Town at 4 p.m. on Mondays and Thursdays, giving an arrival in Durban about 11.30 a.m. on Wednesdays and Saturdays. With the introduction of this new Johannesburg-Cape Town express service, the present fast trains in both directions, in addition to the "Blue Train," will be retained.

INDIA

Kohat Train Outrage

Hindu and Sikh passengers were attacked by armed men wearing the uniform of the Muslim League National Guard when a train from Kohat to Rawalpindi was stopped at Gorzai, 17 miles from Kohat on April 2. Seven persons were killed and eight persons injured; out of 15 persons reported missing, all except one woman have been recovered. Collective fines were imposed on villages near the scene of the outrage.

On the day previous to the incident at Gorzai, an attempt was made to wreck the "Frontier Mail," near Nowshera. Explosives placed under a culvert were discovered and removed shortly before the train was due.

Financing Branch Lines

The Communications Board, Punjab, recently considered the question of financing railway branch lines. It was recommended that the Provincial Government should contribute one-third of the total cost of construction and receive its proportional share of the net earnings. It was recommended further that the selection of alignment and the preparation of estimates should be done in consultation with the Communications Board.

Baldwin Locomotives Ordered

The Railway Board has contracted with the Baldwin Locomotive Works, Philadelphia, for 16 locomotives for Indian railways at an estimated cost of $1,500,000 for delivery in August and September this year. The supply was negotiated by the Indian Supply Mission and Mr. J. M. Crompton, of the Railway Board. There may be further purchases if the locomotives are found satisfactory.

Central Board of Transport

With a view to co-ordinating the planning and execution of transport development; ensuring the maximum co-ordination of all forms of transport, and the elimination of wasteful competition; and to consider major transport problems that arise from time to time, the Government of India has decided to set up a Central Board of Transport. The board will be composed as follows: Chairman, The Chief Commissioner of Railways, Colonel R. B. Emerson. Members: the Secretary, Transport Department; the Secretary, Communications Department; the Director-General of Civil Aviation; a representative of the Commerce Department; the Financial Commissioner, Railways; the Financial Adviser, Communications.

Mr. S. Chakravarti, Deputy-Secretary, Transport Department, will be Secretary to the board. The board will be a standing body, advisory in its functions, and will meet at frequent intervals.

New Engineering Surveys

The Railway Board has sanctioned two preliminary engineering surveys, to be carried out by the agency of the G.I.P.R. administration, for a broad-gauge railway line from Amraoti to Narkher, a distance of about 80 miles; and for doubling the Budni-Barkhera (Ghat) portion of the Itarsi-Bhopal section of the G.I.P.R., a distance of about 16 miles.

BURMA

Coal Shortage Continues

Labour troubles at the port of Rangoon delayed the restoration of normal services which had been hoped for when the strikes in the Bengal coalfield were settled. Severe restrictions on local services in the Rangoon area were necessary on February 10, on which date all goods trains were cancelled, two main-line passenger services in each direction being run as mixed trains.

When discharge of coal at Rangoon was resumed, fuel was despatched to locomotive sheds throughout the system so as to enable them to hold an average of seven days' consumption. This amount being insufficient for normal services, the embargo on non-priority goods traffic which was imposed on February 8 had to be maintained.

Restoration of Services

On the section of the system west of the Irrawaddy, the train service from Henzada was extended from Myanaung to Aungmyingaing on March 1. This leaves passengers from Henzada to Kyangin with only one mile to travel on foot instead of five as hitherto. It is hoped to begin work on the Daga Bridge, on the southwards branch of this section from Henzada to Bassein, towards the end of the next dry season.

Electric Lighting Progress

A beginning has been made with the restoration of electric lighting on main-line passenger coaches. By March 1 this year, dynamo sets and accumulators had been provided on 20 coaches. A further 15 vehicles had been equipped with lights supplied from adjacent coaches. An experimental installation of three fluorescent tubes is to be made on No. 1 platform at Rangoon Station.

WESTERN AUSTRALIA

Tests of New Spark Arrester

Coal produced in the Western Australian coalfields at Collie, which forms practically 100 per cent. of the fuel used on the railways, sparks very freely. All engines must be fitted with efficient spark arresters, particularly for use in agricultural areas, where fires can cause heavy losses to the community.

Continuous research is directed towards improving the efficiency of spark arresters.

and a new type has been tested recently in which the locomotive draught imparts a gyratory motion to the cinders. Deflectors and vertical strips break up the cinders, which are dead when they emerge from the smokebox. Mesh is not used in the arrester, and engine steaming is not affected.

Observers on a recent test reported that no sparks were seen to escape during the run from Midland Junction to Chidlow, a section which is considered to have the longest sustained steep gradients in the State. The locomotive was hauling a load within 5 tons of its maximum.

CANADA

Grain Exempt from Rates Increase

Mr. R. C. Vaughan, Chairman & President of the Canadian National Railways, stated recently that grain in Western Canada would be exempt from any rates increases granted the railways. The Crow's Nest Pass Agreement, which was statutory, pretty well covered grain, he said, and added that minerals sent by rail would travel at a much lower rate than the 30 per cent. increase which the railways were asking. It seemed that the requested increase was widely misunderstood, for the overall increase would amount actually only to about 20 per cent., taking into consideration the grain exemption and the lower mineral freight rate.

New Equipment for C.P.R.

Initial orders for the C.P.R. 1947 equipment programme involve 3,384 units, with 2,500 steel-sheathed box wagons for the grain-flour and paper trades as the largest single order. Also included in the equipment for which contracts are signed already are 325 overhead-tank refrigerator vans, 250 hopper wagons, 120 motorcar vans, and 50 brake vans. Contracts are in the process of being made for 100 covered hopper vans and 26 mail, luggage, and parcels vans. An order for 13 diesel-electric shunting locomotives to speed up the work at terminals forms part of the general scheme for goods service improvements. They will join 42 already working at Montreal, Toronto, Winnipeg, and Calgary.

UNITED STATES

Semi-Permanent Road-Rail Bridge

In North Dakota, a 1,350-ft. long semi-permanent road and rail bridge is under construction at the site of the Garrison Dam. It consists of steel spans and steel decking, supported by 100-ft. long 24-in. tubular piles driven to a 150-ton resistance. To facilitate subsequent dismantling, all jointing, except the main girder splices, is secured by bolts with automatic locking nuts.

Santa Fe Sleeping Cars

A through sleeping car service between Chicago and San Diego, California, was inaugurated by the Atchison Topeka & Santa Fe on March 29. On the same date an overnight sleeping car service was instituted between Albuquerque, N.M., and El Paso, Texas.

New Line in Florida

A new cut-off line, 29·3 miles long, was opened recently by the Florida East Coast Railroad between the Okeechobee branch and the main line at Fort Pierce. A reduction of 120 miles is achieved in the distance from the fertile Glades district to the main line, sufficient to enable the time for deliveries of vegetables and other produce to be reduced by 24 hr. in comparison with the period when traffic joined the main line at New Smyrna Beach, the original junction.

It was stated at the opening ceremony that the new line is the longest built in the United States since the war. In addition to improving the transport services of the Glades district, it has opened up thousands of acres of land, well adapted to agricultural pursuits. Work was begun in October, 1945, but completion was delayed by shortages of materials. The permanent way consists of new 90-lb. rails. Gradients and curvature are slight.

Train Ferry Service Resumed

The ferry services for goods wagons between New York, New Orleans, and Texas City were resumed by Seatrain Lines on March 12, after a lapse of five years during the war. A new terminal has been built for the ferry ships at Edgewater, N.J. The ferries carry up to 100 wagons each, and sail once a week, departing from New York on Wednesdays for arrival in New Orleans the next Tuesday. Departures for Texas City are made every Friday, giving arrival on the following Thursday.

PALESTINE

Kantara—Rafa Line

Discussions are in progress with the Egyptian Government on the subject of the operation of the British-owned railway from Kantara to Rafa, through the Sinai Desert. Since its construction in 1916-17 as a military railway, it has been operated by the Palestine Railways.

Hedjaz Railway Difficulties

The Hedjaz Railway continues to operate at a loss, and constitutes a serious drain on the resources of the Palestine Railways. The section in Transjordan is operated by the Palestine Railways Administration for the Kingdom of Transjordan.

Heavy rains caused a serious washaway on this railway, close to Mafraq, in Transjordan, on March 4. An embankment 14 ft. high was washed away for a distance of 60 yd., and the engine and an entire train of empty flat wagons plunged into the valley and were partly wrecked. The locomotive crew had remarkable escapes, but the brakesman was killed. These wagons are used normally for the transport of pipes from Haifa Port to Mafraq, for the pipelines of the Iraq Petroleum Company, and can ill be spared. The line was restored and fit for traffic on March 13.

SWEDEN

Bergslagen Railways Purchase Agreement

A provisional agreement was arrived at recently between the Swedish State Railways and the Bergslagen Railways (including the associated Gävle-Dala Railway) regarding terms for absorption of the two companies by the State Railways. Negotiations for this transaction have been in progress intermittently since 1939. The compensation to be paid by the State is approximately Kr. 150 million, equivalent to about £11 million.

The Bergslagen Railways constituted the largest privately-owned system in Sweden, and exercised running powers over the 57-mile electrified main line from Falun to Gävle of the Gävle-Dala Railway. This formed the eastern section of the main route of the Bergslagen Railways from Gothenburg, on the west coast, *via* Kil, Daglösen, Grängesberg, and Ludvika, to Falun; and thence to Gävle on the east coast, a coast-to-coast distance of 354 miles. Electrification of this route was completed on February 18, 1946, as recorded in *The Railway Gazette* of March 15, 1946.

Private Lines Acquired

In recent months the State Railways have taken over the following private lines:—

Christianstad—Hässleholm (16¾ miles)
Eksjö—Österbymo (21⅞ miles)
Lysekil Railway (21¼ miles)
Nässjö—Oskarshamn (92 miles)
Vetlanda Railway (50¼ miles)

All the above lines are steam operated.

DENMARK

Copenhagen Suburban Developments

With traffic increasing continuously on the suburban electric line from Copenhagen to Holte, the time is approaching when it will be necessary to quadruple the 7-mile section from Hellerup to Holte. The State Railways therefore have secured powers from the Rigsdag to acquire the necessary land for laying two additional tracks. Plans are being prepared now, and the appropriations will take place shortly.

Ice on Train-Ferry Routes

Up to 1942, the State Railways had only one ice-breaker to assist the train ferries during severe winter conditions, but in that year a new and much more powerful vessel was acquired. The new ship has accommodation for 600 passengers, so that if conditions become too severe for the train-ferries to get through, the ice-breaker itself can maintain a passenger service, and also take a number of small containers.

This winter the ice-breaker was put to a severe test, as the Danish sounds and belts were filled with ice. The ship operated in the Great Belt, on the main route between Copenhagen, Jutland, and Funen. On most occasions it was possible to get some ferries through during the day, although it took up to three or four times as long as usual. Sometimes, however, no ferries could cross, and the ice-breaker had to maintain the service alone.

ITALY

Milan to Domodossola Electrification

Electric traction will be introduced on the 51-mile Domodossola-Gallarate section of the Domodossola-Milan main line on May 4, the day when the summer timetable becomes operative. The section between Gallarate and Milan is electrified already, but through trains, including the "Simplon Orient Express," are steam-worked throughout between Milan and Domodossola. The service between Milan and Domodossola will be increased from four to seven trains a day each way, and the fastest time will be reduced from 2 hr. 50 min. to 2 hr.

But for the single track section of 16 miles from Arona to Gallarate, the timetable could be improved further. It is expected that the laying of a second track between these two stations will be taken in hand during the current year. The Domodossola-Milan line is electrified at 3,000 V. d.c. Most of the equipment needed has been supplied by Italian industry. Only three substations (Vogogna Ossola, 8 miles to the south of Domodossola; Arona; and Gallarate) have been provided by Swiss undertakings.

XUM

Carbon Piston Rings on Reciprocating Compressors Delivering Oil-Free Air or Gas

The advantages of using graphitic carbon as a self-lubricating material for sealing rings

THE use in industry of compressed air as a motive power for light machines is of long standing and the compression of gases for storage or process purposes has been applied widely. An embarrassing feature in the process of compression has been the passage of oil lubricant from the compressor itself into the gas under treatment, which in some cases is most undesirable, and in others definitely prohibitive.

Oil-free air or other gas is often essential, as in the chemical industry, breweries and foodstuff manufacture, but it is also highly desirable in industrial applications where sensitive pneumatic control devices are used, or where staining of products must be avoided. There are also other applications where the presence of oil or oil vapour in the compressed gases would be extremely dangerous.

There exist two general types of gas compressors, the rotary blower for large volumes at low or medium pressures, and the reciprocating piston compressor for medium volumes at high pressure. The second is in more general industrial use for factory and similar processes. In the past it has been necessary to use auxiliary devices to extract oil from the compressed gases after leaving the compressor, but, in general, these have not been completely effective and demand diligent servicing to maintain their efficiency. In recent years the problem has been met by the more practical method of excluding oil from the cylinder itself and thereby rendering subsequent oil separation unnecessary.

In consequence of the success of the first machines using this new method, industry has realised that supplies of oil-free compressed gases now are readily available and is no longer content to accept oil contamination, or to use auxiliary cleaning apparatus.

The principle by which oil contamination is avoided entirely is by the use of self-lubricating materials for the rubbing surfaces of pistons and glands in the compressor cylinder. The self-lubricating materials which have made possible such oil-less operation of compressor cylinders are the graphitic carbon group, with or without embodied metal, according to the specific requirements of any individual application.

Graphitic Carbon

The use of graphitic carbon in the sealing glands of steam turbines and other rotating plant has been established for so long that its use is known generally, but the successful application of such materials for sealing rings of reciprocating plant and the like is a recent innovation and is less widely known. The advantages of this material are considerable and some details of the development should be welcome throughout the engineering industry.

As is to be expected, the use of new materials without any external lubricant requires certain features of design to be observed so that they may operate to the best advantages. Because of the impracticability of sealing off crank case oil from the cylinder wall in trunk piston type compressors, the well-known crosshead construction is regarded at present as essential. The comparative ease with which oil can be excluded from the cylinder in this type of compressor is the main reason for its use, but it offers other advantages in that the piston is almost entirely free from side thrust, a feature which assists the successful application of graphitic carbon rings.

The entire absence of oil from the cylinder wall necessitates the prevention of contact between it and the metal body, otherwise scuffing of the cylinder bore will occur and adversely affect subsequent operation. This requirement is met by the use of one or more carbon bearing rings on the piston. These consist in general of rings in an appropriate self-lubricating material—made without any gap and subject to allowances for expansion—placed bottom on to their piston grooves. The rings are made a sliding fit into the cylinder body, and the radial clearance between piston and cylinder wall therefore governs the amount of permissible wear of these rings before contact between piston and cylinder can take place.

Although generally made solid, the carbon bearing rings also may be segmented, in which case all segments will butt closely at the joints. Because of the low coefficient of expansion of carbon, the bearing ring can have a minimum cold clearance in the cylinder of about 0·002 in. The minimum cold radial clearance between the ring and the iron or steel piston should be about 0·0015 in. per inch I.D. of the ring. The cold clearance axially between any carbon ring and piston groove should be about 0·0015 in. per inch width of ring.

The sealing piston rings themselves are commonly made of the Ramsbottom type with scarfed joint although, in certain cases, rings of segmental construction are used, when it is usual to have three segments to a ring. When used as single split rings they are ground to the nominal cylinder bore size in a contracted condition, that is, with the joint closed, to ensure a sufficient outward movement to follow up wear, without overstressing the carbon material.

Self-Lubricating Rings

The self-lubricating rings are usually of square section. The radial depth of the section is kept generally as a fixed ratio of the ring diameter up to about 10 in., but beyond this it is maintained at about $\frac{3}{8}$ in. The cross section of these rings is considerably greater than the normal for metal rings of small diameters, and a little greater at the larger diameters. This requires an increase in the depth of the grooves in the piston, a fact which, with the customary use of solid bearing rings, necessitates using a piston of built-up construction to permit assembly of the rings into the grooves.

The low modulus of elasticity of graphitic carbon makes it necessary to use backing springs behind the piston rings to ensure that they exert adequate pressure against the face of the cylinder wall. These may be iron or steel split rings; or wave springs made of special steel. Experience has shown that a steel split ring hammered to give a uniform outward pres-

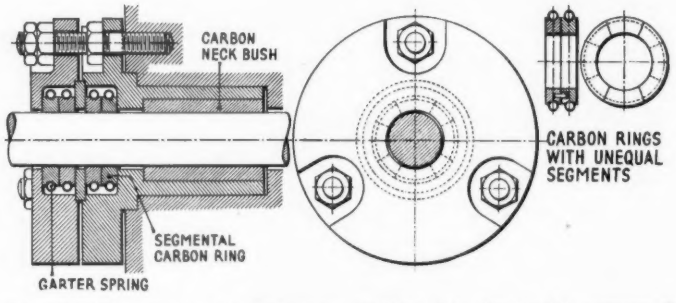


Fig. 1—Diagram of air compressor stuffing box fitted with segmental carbon rings

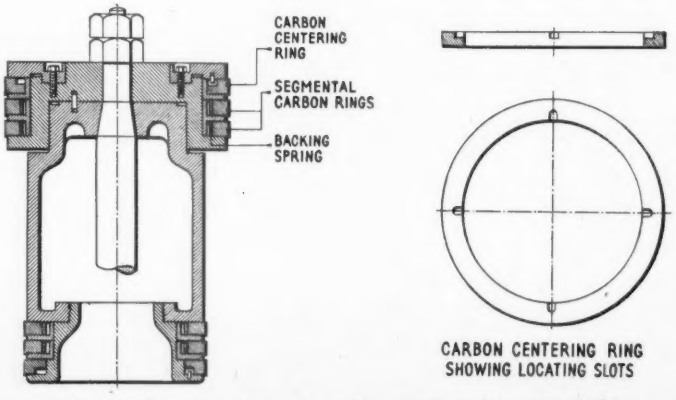


Fig. 2—Diagram of two-piece piston with carbon piston rings

sure at the working surface of the piston ring itself of 5 to 7 lb. per sq. in. is satisfactory.

The bearing rings, as well as the sealing rings, are located preferably in individual compartments of the piston, though the sealing rings may be used in pairs axially to increase sealing efficiency at joints in the rings. More than two rings in a compartment should be avoided; otherwise too much axial float of the rings in their compartment may result.

Horizontal Compressors

In the case of horizontal compressors the weight of the piston concentrates the wear on the lower part of the bearing ring. It is customary, therefore, to make the bearing rings larger or more numerous than is necessary for vertical operation. To equalise the wear of the bearing rings in horizontal machines they should be turned through 120 deg. after every few thousand hours' running.

Exclusion of oil by way of the piston rod calls for special consideration of gland details. It is somewhat difficult completely to remove the oil film from the rod, and if the rod is so short that some portion of it alternatively enters the crank case chamber and the cylinder, special care must be taken to reduce the amount of oil on the rod to the absolute minimum.

In some designs the piston rod is made so long that a portion of it never enters the crank chamber, and in this case the oil film can be positively interrupted. In most constructions, however, such a long piston rod is not convenient and it then becomes necessary to depend on a double piston rod packing to minimise the creepage.

The packing immediately above the crank case is made preferably of a soft material of proprietary type. The stuffing box on the cylinder should be packed with segmented carbon rings and a short guide bush fitted behind these rings, as it is advisable to steady the piston rod. The segmented carbon rings may take the form of a single nest of rings, but sometimes a double nest is used, and in special cases high-pressure air can be introduced between the two sets of rings under control of a suitable valve, thereby holding back the oncoming film of oil by air leakage. Figs. 1 and 2 on page 442 illustrate typical arrangements of a carbon ring stuffing box and piston respectively.

The self-lubricating rings are supplied usually with a fine ground finish all over. To obtain the most satisfactory performance from carbon rings the counterfaces of cylinder bores and piston rods should be of hard, dense structure, and should have the highest possible initial finish, being fine ground and preferably lapped. The cylinder bore material may be of good quality cast iron if the compressor is to be in continuous performance.

If, however, on occasion such a compressor should stand for several weeks the dry polished surface of the cast iron might rust over and it would require some time for the carbon rings to re-establish the polished surface, during which time wear at the rings would be encountered. It is preferable, therefore, to use non-rusting or slow-rusting iron or steel for cylinder liners wherever possible. Materials such as Ni-Resist iron (Mond Nickel Co. Ltd.) or Firth's F.H. Stainless Steel have been found satisfactory for such cylinder liners. Piston rods, if not of non-rusting steel, may be sleeved or chromium plated.

The cylinder construction should be such that the piston rings are covered at all times by the cylinder, that is, not partly uncovered by valve ports at the cylinder ends. Preferably, they should never be wholly uncovered by passing over or on to cylinder ports.

The carbon ring material has a very high polishing action on the cylinder or rod, but dust or grit entering with the incoming air may prevent this polishing action and may destroy any polish developed.

This would be detrimental to the carbon rings, and an efficient air filter of a completely dry type always should be fitted at the inlet to the compressor. It should be placed as close to the compressor as possible, but where this is not possible it is essential that the piping between the filter and the compressor should be protected in its interior from rusting by a suitable paint or hot galvanising. This, of course, is a precaution which is advisable on all piping and with any compressor to prevent rust or scale from reaching the compressor.

Length of Life

When arranged to operate under conditions as mentioned above, the piston rings produce a mirror polish in the bore of the cylinder and will give a life of the order of 10,000 to 15,000 hr. with a negligible wear of the cylinder wall.

The Morgan Crucible Co. Ltd., of Battersea, supplies several grades of self-lubricating material which are selected according to the particular requirements of the application, and has given the following information as to the range of physical characteristics:—

Ultimate tensile strength, 2,000/6,000 lb. per sq. in.

Compression strength, 20,000/50,000 lb. per sq. in.

Coefficient of expansion, 0·000003/0·000007.

Specific gravity, 1·7/3·0.

The Southern Shan States Railway

This section of the Burma Railways climbs 3,500 ft. in 64 miles, through country with unusual topographical features

THE announcement in our March 21 issue of the re-opening of the Pyinyaung-Heho section of the Southern Shan States branch of the Burma Railways, which had been closed since the Japanese invasion of Burma in 1942, recalls some of the remarkable scenic beauties and engineering feats of this line.

From Thazi junction—near Meiktila of war fame—306 miles from Rangoon on the main line to Mandalay, the branch runs south-east and eastwards, climbing with 1 in 40 grades to Yinmabin, summit of the outer ridge of the Shan hills, 1,300 ft. above sea level. It then drops 300 ft. to Pyinyaung, 29 miles from Thazi. The main ascent begins near Pyinyaung, at first with a 1 in 40 ruling grade, but steepening to 1 in 25 beyond Lebyin. Here the line zig-zags up the mountain side with four reversing stations, and with a complete spiral loop before the 4,500-ft. main summit near Kalaw is reached.

Open rolling country is then traversed to Heho, 87 miles from Thazi. On the Kalaw-Heho plateau there is an almost English climate, and Kalaw was a flourishing hill station, where many Europeans had retired before the war.

It will be seen that the reopened 64-mile section from Pyinyaung to Heho embraces the great 3,500-ft. ascent, which includes nearly 16 miles of 1 in 25 grade, compensated for curvature, and broken only by short lengths of level for stations and vacuum brake releasing. At four of these stations trains reverse, running brake-van or pusher engine first between Reversing Stations Nos. 1 and 2, and again between Nos. 3 and 4, whichever way they are travelling.

Mallet compound 0-6-0 + 0-6-0 locomotives, built by the North British Locomotive Co. Ltd., were used at first on this branch, and later 2-8-0 + 0-8-2 Beyer-Garratts also were in service there. Pushers, when used, were usually 2-6-2 tank engines of sturdy design.

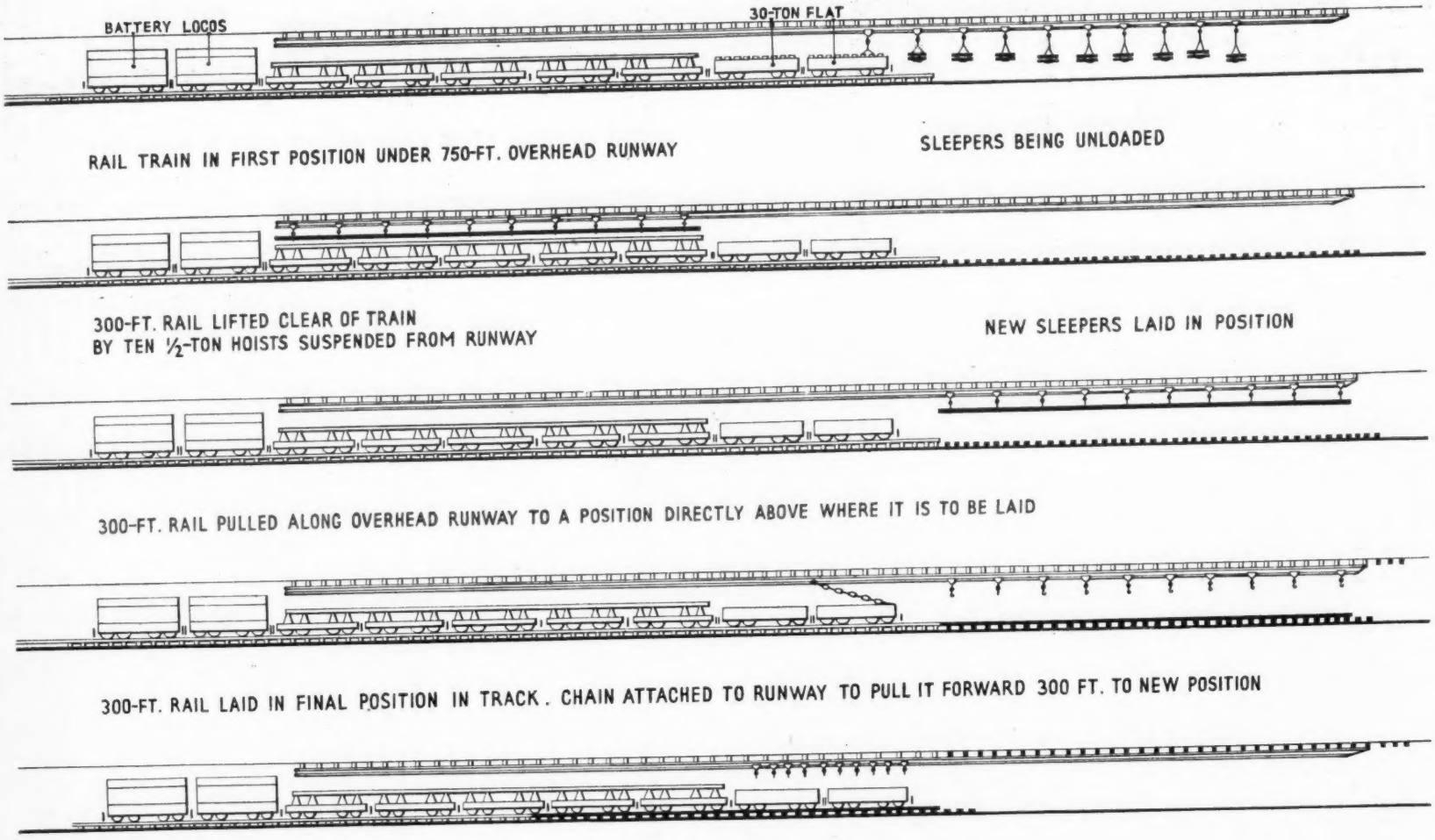
The natural formation of the mountains below Kalaw is curious. Deep valleys, often 2,000 ft. deep, occur, but have no outlets; they are known as punch-bowls. The line crosses a knife-edge ridge in one place, with a normal valley on one side and a punch-bowl on the other. Punch-bowls may be up to 10 miles long and 4 or 5 miles wide.

Drainage escapes from them as underground rivers, tunnelling their way beneath the limestone mountains. The plateau round Kalaw is largely pine-clad, but the main ascent is mostly on precipitous mountain sides, thickly covered with forest jungle.

EAST KENT ROAD CAR CO. LTD.—In his speech at the annual general meeting of the East Kent Road Car Co. Ltd., the Chairman, Mr. R. P. Beddow, said that in his view the nationalisation of the passenger road transport industry was both unnecessary and undesirable in the public interest. The industry was highly organised and efficiently administered; many schemes of co-ordination already were in existence, and any necessary further schemes would be introduced under the present system wherever they were called for. Summarising the powers of the Minister of Transport under the transport nationalisation proposals, Mr. Beddow maintained that it would be fundamentally wrong for such complete and dictatorial powers to be vested in any one person in a country which was governed under democratic principles.

DISPLAY OF YORKSHIRE COPPER WORKS PRODUCTS.—On the stand of the Yorkshire Copper Works Limited at the British Industries Fair will be shown a wide range of tubes and fittings for a variety of purposes. Included in the display will be a selection of locomotive tubes, power station condenser tubes, refrigerator tubes, etc., as well as examples of Yorcalbro aluminium brass tubes, which are resistant to salt water corrosion. Yorkshire capillary fittings, which make a particularly neat joint and are used for connecting copper tubes for engineering, plumbing, sanitation, etc., will be displayed.

Modern Tube Tracklaying


BATTERY LOCOS
30-TON FLAT
RAIL TRAIN IN FIRST POSITION UNDER 750-FT. OVERHEAD RUNWAY
SLEEPERS BEING UNLOADED
300-FT. RAIL LIFTED CLEAR OF TRAIN
BY TEN ½-TON HOISTS SUSPENDED FROM RUNWAY
NEW SLEEPERS LAID IN POSITION
300-FT. RAIL PULLED ALONG OVERHEAD RUNWAY TO A POSITION DIRECTLY ABOVE WHERE IT IS TO BE LAID
300-FT. RAIL LAID IN FINAL POSITION IN TRACK. CHAIN ATTACHED TO RUNWAY TO PULL IT FORWARD 300 FT. TO NEW POSITION
RAIL TRAIN AND OVERHEAD RUNWAY IN POSITION OVER NEWLY-LAID TRACK READY TO RE-COMMENCE SLEEPER LAYING

Diagrams showing the sequence of operations adopted by London Transport to facilitate laying 300-ft. rails in tube tunnel with the aid of a temporary overhead runway attached to the upper segments of the tube lining

Modern Tube Tracklaying

Handling sleepers and 300-ft. rails by overhead runway

(*See also illustrations on page* 446)

THE introduction of 300-ft. welded rails as the standard length for use on London Underground railways has made it necessary to devise a mechanical method of track laying in tube tunnels. Even with the previous standard 60-ft. rails, mechanical appliances in the form of the "elephant's trunk" (or cantilever arm) had been used.

Obviously, a 300-ft. rail weighing nearly 4 tons cannot be manhandled from the rail train forward along a 12-ft. dia. cast-iron tunnel, with minimum clearance between the vehicles and the sides of the tube, and it would be extremely difficult to devise any cantilever arrangement to extend up to 360 ft. ahead of the train. A method of transporting these rails has therefore been devised which employs an overhead runway suspended from the tunnel roof. It has been tested successfully and has now been adopted. Recently we saw sleepers and rails being laid by this means on the new tube section to Leytonstone which is to be opened next Monday.

The overhead runway itself consists of a 750-ft. run of 8-in. by 4-in. rolled steel joist in lengths of 25 ft. joined by 2-in. by 12-in. fishplates secured by six half-inch bolts. This is suspended from the tunnel roof by hangers placed at 10-ft. intervals, which are fixed by quickly-adjustable expanding tubular pieces each of which fits tightly into a tunnel segment, and over the segment bolts.

The first operation preparatory to track laying is to hang brackets from the top segment bolts. These hangers are provided with rollers on which the upper flange of the runway is free to move horizontally. Lengths of rolled-steel joist are then threaded on to the rollers and joined together to form the runway; the front nose of the first joist is tapered by having the top flange cut to a spear head to allow it to be guided easily into the hangers. The lower flange of the runway carries roller carriages, with a half-ton differential hoisting tackle suspended from each. The hoists are provided with special clips to fasten securely to the rails and with chains designed to carry five sleepers at a time.

A considerable amount of preparatory work has to be done before the rail train arrives at the railhead. The rails are cut accurately to the required lengths and they are marked individually to show their location in the tunnel. The points where the hoists are to be attached are also marked on the rails, to ensure even distribution of the load during lifting. Similarly, the tunnel is surveyed and marked to obtain the most economical track layout and the correct positioning of the rail joints.

On the new 300-ft. rail sections of track,

Overhead runway, showing fishplated joint, roller cage, and method of suspension from segment bolts

with machined flush-fitting joints, the joints and fishplates are staggered with the left-hand joint 60 ft. in advance of the right-hand.

The sequence of operations during the laying is shown in the diagrams on the opposite page.

The track-laying train, consisting of two 30-ton bogie flat wagons for sleepers and five bogie bolster rail cars, is propelled by two battery-electric locomotives up to the railhead.

The first tracklaying operation consists of laying out the chaired sleepers on 2-in. oak packings. The sleepers are picked up in bundles by chain tackles and pulled along on the overhead runway to the far end of the length of track which is being laid and placed in position. This method of working back to the train obviates the necessity of the staff having to step over sleepers already placed.

While the sleepers are being laid, the hoists are drawn back over the rail cars. One rail at a time is lifted from the rail cars. The rail is pulled forward by hand until it is directly above the position it is to occupy in the track.

The rail is lowered on to tubular triangular frames which guide it into position in the chairs, and it is fastened with keys; the tackle blocks are then run back and the second rail of the pair is brought forward and dealt with similarly. When the rails are in the chairs and keyed up, the top of the road is checked by means of a level stick from nicks cut into the segments every 30 ft. or so, and the oak packings beneath the sleepers adjusted as necessary. When both rails are laid and secured, a chain is attached to the leading flat wagon and to the overhead runway.

The train is propelled forward over the newly-laid length; and the runway is correspondingly moved forward 300 ft. The hangers at the rear are then taken down, carried forward, and re-erected in advance of the runway. The train and runway are now in position to begin the sequence of operations again.

The normal rate of progress is three lengths, or 900 ft., a shift.

Behind the train, final adjustments are made to alignment and top, and wedges are inserted at the sleeper ends to ensure that the checked alignment is maintained until the concreting-in is done. This adjustment of the track is done by a small gang of six men. Positive insulator blocks are then placed in position and the track is now ready for concreting.

SOUTHERN RAILWAY INSTRUCTIONAL CLASSES.—A quiz on Rules & Regulations was held at Bournemouth recently between two teams drawn from the local rank and file of the Operating and Motive Power Departments of the Southern Railway. Mr. F. C. Bishop, Divisional Superintendent, Southern, was the question-master. The quiz, which was held after working hours, was the culmination of a series of classes organised by local stationmasters and an all-grades committee, and each side scored 35 points out of a possible 36.

AGREED CHARGES.—The twenty-fifth annual report of the Railway Rates Tribunal states that, during 1946, the number of applications filed for the approval of agreed charges was 671, an increase of 36 over the figure for 1945. No objections were made to the applications, and during the year the Tribunal approved 663 agreed charges, of which 538 related to merchandise train traffic, 124 to passenger train traffic, and one to both classes of traffic. These orders covered the whole or a specified portion of the traffic of 784 traders, and 200 related to new agreed charges, the remainder being renewals or substitutions with or without modification of charges previously approved. The majority of the new charges were agreed to enable the railway companies and traders to effect reductions in clerical work.

METROVICK B.I.F. DISPLAY.—In view of the wide range of Metrovick products, embracing almost every known form of heavy electrical and many types of mechanical plant, only a few examples can be shown on the stand of the Metropolitan-Vickers Electrical Co. Ltd., at the British Industries Fair, and these examples have been selected to emphasise the progress made in transition from war to peace. The main feature will be a display of radar equipment. The mechanical exhibits will relate, first, to power plant, and, second, to gas turbines, in which connection Metrovick experience in jet propulsion of aircraft is bearing fruit in developments for power station, traction, and industrial applications. Attention will be called to a new method of non-destructive testing of spot-welding in stainless steel developed by the Metrovick Research Department for use in the manufacture of gas turbine parts. A wide range of Metrovick motors and control gear for industrial purposes will be the subject of a display cabinet. Lamps and lighting equipment will be typical of the Metrovick range, and will include fluorescent tubular lamps and the Trafford and Welwyn mercury discharge lamps for street lighting.

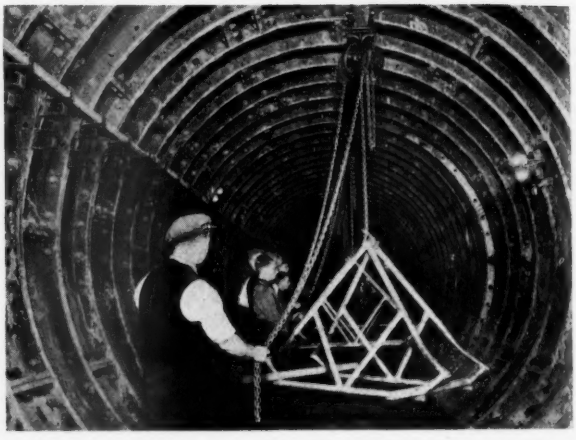
G. A. HARVEY AT THE B.I.F.—For some years, the firm of G. A. Harvey & Co. (London) Ltd. has been engaged in the manufacture of pressure vessels of all kinds, and special attention will be called to this important department of the Greenwich works at the forthcoming British Industries Fair. An extensive range of Harco perforated metals also is being arranged this year, as well as wirework of various kinds for industrial purposes, such as pipe guards, partitions, radiator covers, etc., and also woven wire cloth in all meshes and gauges for vibrator screens. Other exhibits on this stand at Birmingham will include pressed-steel gutters in all sections and thicknesses. At the Olympia section of the B.I.F. this firm will be showing a range of office equipment.

XUM

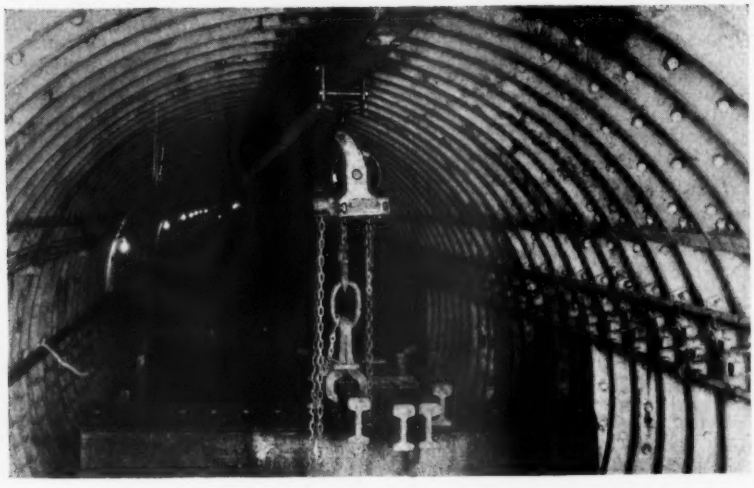
Modern Tube Tracklaying

(See article on page 445)

Lowering chaired sleepers from overhead runway



Lowering tubular triangular frame for guiding rails into position



View from top of works train showing 300-ft. rail being lifted from flat car by overhead runners

Beginning to lower 300-ft. rail from overhead runway

Rail being guided into chairs by triangular frame

G.W.R. Developments in Maintenance Equipment—3*

Mechanical shovel for loading wagons or light excavation

THE Hi-Lift mechanical shovel illustrated is used by the G.W.R. mainly at its docks in South Wales for loading loose material, such as sand, gravel, coal, and refuse into railway wagons; it can load into an ordinary five-plank wagon with ease. The bucket is of ½ cu. yd. capacity, and, if fitted with teeth could be used to excavate in soft, undisturbed ground. The shovel is made by the Chaseside Engineering Co. Ltd., Station Works East, Hertford.

Although the jib cannot be slewed, the machine manœuvres easily; it has a turning radius of 15 ft., and its overall length is about the same. The height of the top of the jib above ground can be varied between 10 ft. 9 in. and 8 ft. 10 in. by altering the position of the tie bar, which is shown in a different position in the two illustrations. The overall height can be reduced further to 7 ft. 5 in. by disconnecting the tie bars so that the shovel is well within the loading gauge for travel on a flat wagon, and a specially low wagon is not required except for ease in side unloading.

Crane slings are apt to impose an undue strain on the sides of the superstructure, and it is found best to load the machine into a railway wagon by means of a light sleeper ramp, as shown in the second illustration, which can be built quickly. The machine weighs just under 4 tons, and can be licensed to travel on the public highway.

Similar shovels of ⅓ cu. yd. and ¼ cu. yd. capacity also are manufactured by the Chaseside Engineering Co. Ltd. The machine is powered by a 28-h.p. Fordson tractor engine, running on petrol.

* Previous articles in this series appeared in our issues of April 4 and 25

Hi-Lift mechanical shovel at work

Use of ramp for loading shovel into wagon

French National Railways ss. "Londres" arriving at Newhaven

The ss. "Londres" arriving at Newhaven after her inaugural trip from Dieppe on April 18 *(see also page. 457 and our last week's issue)*

Jet Combustion Chambers for Steam-Raising

An experiment in fuel economy with the combustion chambers of Rolls-Royce jet engines

Two jet engine combustion chambers fitted in fireboxes and surrounded by tubes for cooling purposes

A NOVEL use was found for Rolls-Royce jet engines during the emergency occasioned by the fuel shortage and the exceptional severity of the weather. Not only were Derwent engines used to clear the snow from blocked railway lines and main trunk roads, but the Rolls-Royce Company has devised also a means of using the combustion chambers of jet engines for firing boilers.

As development testing of combustion chambers, using paraffin as fuel, is going on continually in the Rolls-Royce experimental departments at Derby, it was thought that this heat could be employed usefully to raise steam in the boilers and thus save coal. A single experimental unit was constructed first, comprising a Nene combustion chamber, which was installed in the firebox of the boiler and fed with paraffin from an auxiliary supply system. A forced draught was created, using a 6-h.p. electric motor driving a fan, the air being carried by a duct into the combustion chamber. Ignition was by the normal torch igniters used on the Nene engine.

The first experiment proved so successful that further units were developed immediately to burn a standard heavy fuel oil. The later units comprise two combustion chambers, one to a boiler, with a common forced-draught system; provision is made for adding a third combustion chamber so that the complete assembly will comprise eventually a treble unit with the one motor and fan. As may be seen from the illustration, the combustion chamber is surrounded by a tube, over which cooling air flows to prevent overheating of the water tubes in the boiler.

Installations Extended

Since the original improvised units were made at the Rolls-Royce works, the company has been able to assist A. V. Roe & Co. Ltd., of Manchester, by supplying that firm with a number of sets of equipment, and also advising in the installation. In addition, the Rolls-Royce car factory at Crewe, the service station at Hythe Road, London, and the Rolls-Royce associate company, Rotol Limited, have been equipped. A great saving in coal is being effected by these installations.

The initial design was undertaken to assist in the national emergency by saving coal, and economies amount to as much as 5 cwt. per boiler per hr. Other advantages can be claimed also, one being the speed with which steam is raised in the boiler. The average time required to raise steam in the boiler using coal is approximately 4 hr., whereas the direct flame from the jet combustion chamber will do it in approximately 1½ hr. There is, also, a considerable saving in labour, by eliminating stoking, and the fuel consumption is comparatively modest, approximately 25 gal. of standard heavy fuel oil an hour being used. A firebrick arch is provided inside the boilers in order to deflect the flames from the combustion chamber over the water tubes, as in common practice with oil-fired boilers.

SCOTTISH FACTORY FOR METROPOLITAN-VICKERS.—A former Ministry of Supply clothing depot at Motherwell is being taken over by Metropolitan-Vickers Limited and an associated company as a factory for industrial purposes. The staff of the Metropolitan-Vickers meter department is expected to move in within a few weeks, and will be followed by the personnel of the associated company, which will be engaged on the manufacture of scientific instruments. When fully operative, the new factory will provide employment for 2,000 people. The premises were completed in 1943, and are modelled on the lines of industrial estate factories. They cover 250,000 sq. ft.

FORTH BRIDGE REPAIRS, L.N.E.R.—The second part of the major repair work undertaken on the Forth Bridge last year, was begun on April 27, and will continue for some time. This year the northern approach to the bridge is being dealt with, and the work consists of reconditioning the girder bearings and strengthening them in accordance with modern practice, as well as replacing the cast-iron bedplates on the tops of the piers with cast-steel bedplates of modern design. The lines over the bridge will be closed to traffic from 12.1 a.m. to 10 a.m. every Sunday, and for two periods of four hours during the night in mid-week. On Sundays, the 4.15 a.m. train from Edinburgh Waverley to Aberdeen (7.30 p.m., Saturday, from Kings Cross) will be diverted *via* Alloa, Dunfermline Upper and Thornton, and will be due to reach Aberdeen at 9.4 a.m. The 7.35 a.m. Sunday train, Edinburgh Waverley to Aberdeen, also will follow this route, and will be due at Aberdeen at 12.43 p.m.; a connecting service will run from Dunfermline Upper to Inverkeithing. Connection to and from Kirkcaldy will be made at Thornton. The 7.40 a.m. train on Sundays, Waverley to Perth, will leave at 7.50 a.m. and run *via* Alloa Bridge, Stirling and Dunblane; an additional train, leaving Inverkeithing at 8.10 a.m., will give a service to Perth for passengers from Inverkeithing, Dunfermline Lower, Cowdenbeath, and Kinross. There will be a connection at Perth for Kinross for passengers from Edinburgh.

MOND NICKEL RESEARCH WORK.—The extensive service offered by the Development & Research Department of the Mond Nickel Company will be featured at the British Industries Fair. The stand will be divided into four sections, each illustrating the particular type of service, with examples and diagrams showing typical problems which may be referred to the company, and the ways in which they can be solved. The first section will deal with research undertaken with a view to evolving new alloys for a specific purpose, such as the evolution of the Nimonic series of alloys for highly-stressed components of the gas turbine, and another section will be devoted to service problems, showing, among other things, how the introduction of a special nickel steel has resulted in considerable economy in the use of chisels for railway track maintenance. The remaining sections will deal with choice of materials and production problems. This firm also will have a stand in the London section of the British Industries Fair.

B.I. CALLENDER'S CABLES B.I.F. DISPLAY.—An interesting exhibit on the stand of British Insulated Callender's Cables Limited at the British Industries Fair will be a magnetic moulding machine which works on 240-volt d.c. current and is so designed that the operator can concentrate on mould production without having to spend valuable time stripping the finished moulds. Maintenance costs are kept low, because pipe lines, glands, and packings are eliminated, by using electricity instead of hydraulic power. Power factor improvement through the use of capacitors will also be demonstrated by means of a specially built glass-case set. Other exhibits will include crane collector equipment of various types; and cables and boxes.

Operating the South African Royal Train

Technical and administrative arrangements for the 5,000-mile journey, which ended at Cape Town on April 20

Cleaners at work on the coaches during the tour

COMPREHENSIVE as the arrangements have been for keeping the public informed of the progress of the Royal tour in South Africa, relatively little has been said regarding the administrative and operating problems involved in working the train. An account of this aspect of the tour has been published in the *Railway Bulletin* of the South African Railways & Harbours, showing the detailed preparations which had to be made over a considerable period before the Royal Party arrived in South Africa, quite apart from the special duties undertaken while the tour was in progress.

A total of 180 drivers, and a similar number of firemen, were detailed for duty on the Royal Train and the pilot train, being selected for their knowledge of the different sections of the route traversed. Similarly, 102 guards were chosen for duty on the train at different times.

District inspectors, locomotive inspectors, and permanent-way inspectors accompanied the Royal Train while passing over their own sections of the system. A carriage & wagon inspector travelled over the entire route, and in company with the guard on duty, made an inspection of the vehicles at every stop where time permitted. Numerous special arrangements relating to signalling, inspection of track and tunnels, and halting of trains on adjacent lines, were made on principles similar to those observed during Royal journeys in this country.

In order that the Royal train should arrive at a convenient time at places where ceremonies were to be held, it was necessary sometimes to spend the night at some point between the principal stations. During such halts the trains were cleaned, and the water tanks filled. This work necessitated accommodating a team of some 50 Europeans and 40 non-Europeans, as well as railway police, at the stabling points. Passenger coaches and dining cars were provided in the vicinity when the special staff could not be housed elsewhere.

Watering Facilities

On some sections the locomotive watering facilities would have been insufficient to deal with double-headed trains, sometimes with banking assistance. It was necessary, also, to store water for replenishing the bathrooms and shower cubicles on both trains, and for this purpose temporary storage tanks had to be erected at strategic points. An unusual railway problem was that of dealing with the laundry of the passengers on the two trains. Every passenger was issued with a numbered bag, which was collected at various points. All the laundry for the members of the Royal Family was done in the railway departmental laundries. Other laundry was distributed to approved concerns. On completion, the laundry was delivered to the next convenient stopping place.

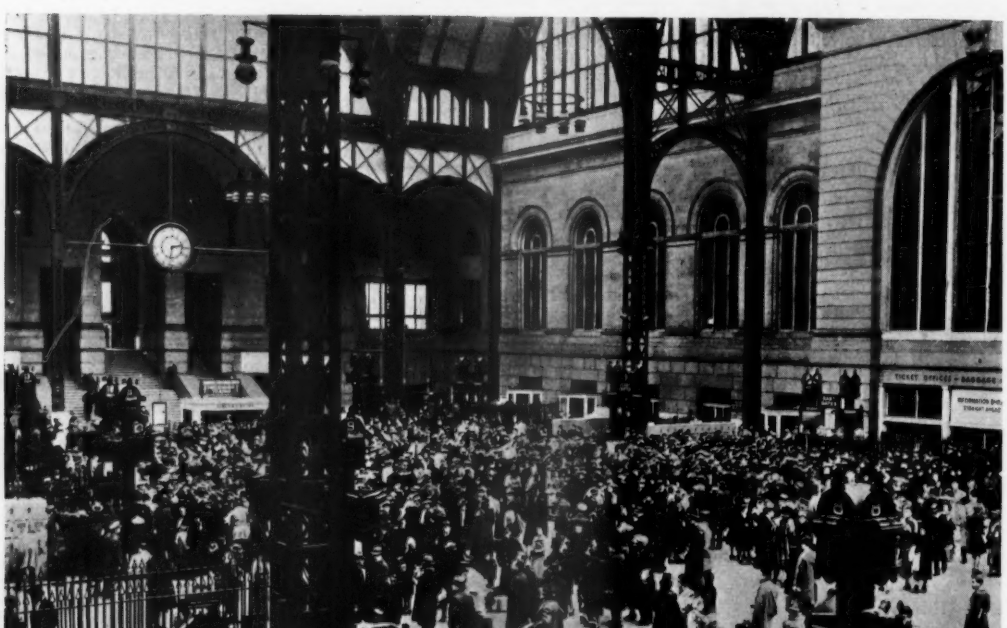
Three platoons of the South African Railway Police, each of 32 men, underwent a special course of training in connection with their duties on the tour. These platoons travelled from point to point by ordinary train, or sometimes by motor transport, so as to be available at important centres before the Royal Train arrived. An officer and eight selected N.C.O.s acted as a security guard on the Royal train throughout its journey.

Before the tour concluded at Cape Town on April 20, the two trains were halted in the Karroo Desert on April 19, and the occupants of both lined up alongside. The King and Queen passed along both lines and shook hands with all the officials, police, and servants who had attended them directly or indirectly.

The Royal Train near Queenstown in the Cape Province

New York Railway Passenger Amenities

The interior of a Pennsylvania Railroad ticket office in New York



Train concourse, Pennsylvania Station, New York City

RAILWAY NEWS SECTION

PERSONAL

Mr. John Elliot, Deputy General Manager, Southern Railway, was presented recently with the United States Medal of Freedom with Bronze Palm by Major-General Clayton L. Bissell for his services rendered to the United States Armed Forces during the war. Mr. W. C. Collins, Assistant to the Traffic Manager, Southern Railway, also has been awarded the Medal of Freedom with Bronze Palm.

The Parliamentary Secretary to the Ministry of Transport has appointed Miss G. A. Jones to be his Private Secretary.

Sir George Nelson (Chairman & Managing Director, English Electric Co. Ltd.) has been elected Chairman of the British Electrical & Allied Manufacturers' Association for the ensuing session, in succession to Mr. E. C. Holroyde (Vice-Chairman of Crompton Parkinson Limited), who now becomes Vice-Chairman of the Association.

Mr. H. G. Kerry, Divisional Locomotive Superintendent, Paddington, Great Western Railway, and Mr. Lionel Lynes, Technical Assistant (Carriages & Wagons) to Chief Mechanical Engineer, Southern Railway, are among those recently elected Members of the Institution of Mechanical Engineers.

We regret to record the death on April 21 of Mr. Herbert Thomas Rice, late Director, English Electric Co. Ltd.

INDIAN RAILWAY STAFF CHANGES

Colonel R. B. Emerson, Chief Commissioner of Railways, proceeded on 3 months' leave from April 24. Mr. S. J. P. Cambridge, General Manager, B.N.R., is officiating in his place.

Mr. V. L. Thompson has been appointed to officiate as Chief Commercial Manager, B.A.R., as from October 30 last.

Mr. K. H. Rose, who was confirmed permanently as Chief Engineer, B.B.C.I.R., as from August 29 last, has been granted 24 months' leave preparatory to retirement, as from August 31 last. Mr. J. S. Bearcroft has been appointed to officiate as Chief Engineer.

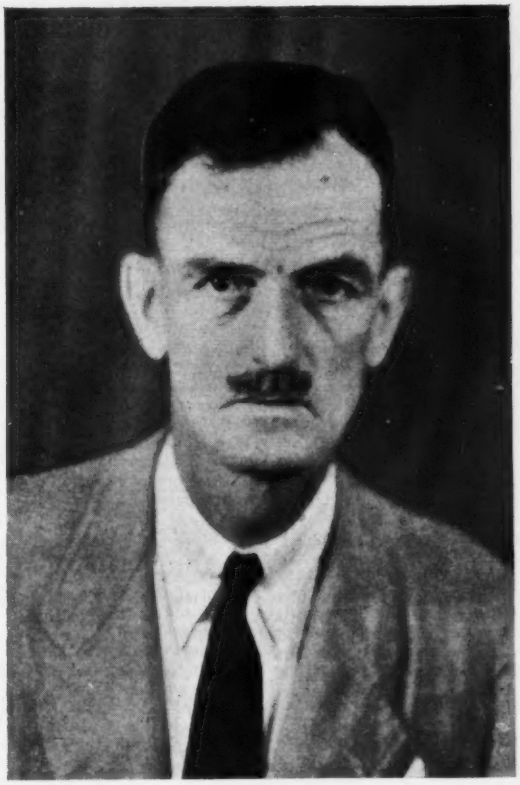
Mr. H. R. Eveleigh has been appointed to officiate as Engineer-in-Chief, B.B.C.I.R.

Mr. V. B. Arte has been appointed Financial Adviser & Chief Accounts Officer, E.I.R.

Mr. Gilbert Szlumper, at one time General Manager of the Southern Railway, and now London Representative of the North British Locomotive Co. Ltd., has been installed as Prime Warden of the Worshipful Company of Shipwrights for the ensuing year.

We regret to record the death on April 25, at the age of 65, of the Marquess of Bute, K.T., Chairman of the Cardiff Railway Company, and a Director of the Rhymney Railway Company, until the incorporation of those railways in the Great Western Railway Company in 1922.

Mr. F. E. Musgrave, M.C., B.A., B.A.I., who, as recorded in our March 21 issue, succeeds Mr. V. P. Bhandarkar as General Manager of the Bengal Assam Railway on the latter proceeding on leave last month preparatory to retirement, was educated at Berkhamsted School and at Trinity College, Dublin, where he obtained the degrees of B.A. and B.A.I. On the outbreak of war in 1914, Mr. Musgrave joined the Royal Engineers; he attained the rank of Major, was awarded the Military Cross and Bar, and was mentioned in dispatches twice. In 1920 he entered the service of the Assam-Bengal Railway, and was promoted District Engineer in 1934, and Deputy Chief Engineer in 1940. After the acquisition by the State of that railway and its amalgamation with the Eastern Bengal Railway to form the Bengal Assam system, he was first Deputy Chief Engineer, Assam Bengal Zone, and then Engineer-in-Chief, Gauhati, on the doubling through the eastern frontier of India to Ledo. From March, 1945, Mr. Musgrave was posted as Engineer-in-Chief, Projects & Development, and a year later he was promoted to be Engineer-in-Chief, Open Line.



Mr. F. E. Musgrave

Appointed General Manager, Bengal Assam Railway

The following have been elected members of the executive committee (South Wales) of the newly constituted Industrial Association of Wales & Monmouthshire for 1947-48: Mr. L. E. Ford, Chief Docks Manager, Mr. David Blee, Chief Goods Manager, and Mr. H. H. Phillips, Assistant to Superintendent of the Line (Cardiff), Great Western Railway; and Mr. E. V. Ralph, Red & White United Transport Limited, Chepstow. Mr. W. J. Crosland-Taylor, General Manager, Crosville Motor Services Limited, has been elected a member of the executive committee (North Wales) for 1947-48.

The late Sir George C. C. Hamilton, who was Chairman of the White Pass & Yukon Railway Co. Ltd., left £69,316.

Mr. Robert Foot has been elected President for the ensuing year of the Mining Association of Great Britain, in succession to Lord Crawford.

Mr. T. W. Towers, who was appointed Acting Operating Manager in September, 1946, has now been confirmed in the position of Operating Manager, Trams & Trolleybuses, L.P.T.B.

Among those recently transferred from associate membership to membership of the Institution of Civil Engineers are Messrs. B. C. Drummond, North Western Railway, India; N. S. Cox, Divisional Engineer, Plymouth, Great Western Railway; and C. C. R. Edwards, Burma Railways.

The first Baron Southborough, who died on January 17, a Director (and Chairman, 1931-43) of the Westinghouse Brake & Signal Co. Ltd., a former Chairman of Sir W. G. Armstrong, Whitworth & Co. Ltd., and formerly a Director of the Underground Electric Railways Co. of London Ltd., left £212,791.

Mr. O. A. Trudeau has been appointed Assistant Passenger Traffic Manager, Canadian National Railways, in succession to the late Mr. W. E. Norton. Mr. H. J. Nevin, Vice-Chairman of the Canadian Passenger Association, has been appointed to succeed Mr. Trudeau as General Passenger Agent, with headquarters at Montreal.

Tube Investments Limited announces the following appointments:—Mr. D. Lacy-Hulbert to the group's Precision Tubes Division as Director of Production; Mr. E. D. E. Andrews as a Director, and General Manager of the group's export organisation, T.I. (Export) Limited, and Mr. Arthur Chamberlain as Deputy Managing Director of the subsidiary, Hercules Cycle & Motor Co. Ltd.

G.W.R. APPOINTMENTS

General Manager's Office

Mr. Christian Barman, F.R.I.B.A., to be Assistant to Chief Officer for Public Relations.

Traffic Department

Mr. C. W. Powell, Divisional Superintendent, Swansea, to be Divisional Superintendent, Paddington, on the retirement of Mr. C. T. Cox.

Mr. J. F. M. Taylor, Divisional Superintendent, Worcester, to be Divisional Superintendent, Swansea.

Mr. C. F. E. Harvey, Assistant Divisional Superintendent, Birmingham, to be Divisional Superintendent, Worcester.

Photo] [Lafayette

Mr. F. L. Castle

Elected President, Institution of Railway Signal Engineers

Mr. F. E. Harrison

Assistant Chief Engineer, L.N.E.R., 1943-47

Mr. F. G. Humphrey

Appointed Director of Information, Ministry of Transport

Mr. F. L. Castle, A.M.I.E.E., M.I.R.S.E., M.Inst.T., who, as recorded in our March 28 issue, has been elected President of the Institution of Railway Signal Engineers, is General Manager of the Siemens & General Electric Railway Signal Co. Ltd. Mr. Castle entered the service of the Midland Railway in 1909 at Derby as Technical Assistant in the Telegraph Department, and was appointed Relief Inspector in 1914. In that year he joined the Royal Engineers; and he served in Gallipoli, Egypt, France and Belgium, and on the western front commanded No. 2 Railway Telegraph Company, R.E. On demobilisation in 1919 he entered the service of the General Electric Co. Ltd., to create a Railway Signal Department, and was appointed Manager in 1922. On the formation of the Siemens & General Electric Railway Signal Co. Ltd., he was appointed General Manager of that company. Mr. Castle has made many business journeys overseas, visiting railways in practically every country of the British Empire, most of the countries in South America and Europe, and the U.S.A. He is a member of the committee of the Railway Brakes & Signals Industrial & Export Group, and a Director of the Railway Signal Co. Ltd. He is also a Fellow of the Permanent Way Institution. Mr. Castle joined the Institution of Railway Signal Engineers as a Student on its formation in 1913; he has been a Member of Council for fifteen years.

Mr. Arthur B. Longbottom, Librarian, Derby Railway Institute, is retiring this month. He joined the library staff of the old Midland Railway Institute in 1900, and succeeded the late Dr. E. A. Baker as Librarian in 1904. During his long tenure of office Mr. Longbottom has re-organised the old library on the open-access system, and made it one of the best-known railway libraries in the Midlands. He is an ardent railwayist, and has maintained close contact with railway students; and his help has often been sought in railway historical matters. He has contributed historical paragraphs to our "Scrap Heap" columns over many years. His father, the late Mr. W. S. Longbottom ("Horace Weir"), was Press Association correspondent for Derby and contributed the regular feature Midland Railway Notes to our constituent, *The Railway News*, before the 1914 war. Mr. A. B. Longbottom is a Fellow of the Corporation of Certified Secretaries, and was for some years Honorary Secretary of the L.M.S.R. Lecture Society. During the first world war he held a commission in the 5th Sherwood Foresters, and he served in the recent war as an Assistant Platoon Commander, Derby Home Guard.

Mr. F. E. Harrison, O.B.E., M.Inst.C.E., who, as recorded in our April 25 issue, is retiring on May 21 from the position of Assistant Chief Engineer, L.N.E.R., is the eldest surviving son of the late Mr. C. A. Harrison, for many years Engineer, Northern Division, North Eastern Railway, and later Consulting Engineer to that company. Mr. F. E. Harrison was born in 1882, and was educated at Aysgarth School, Yorkshire, and Winchester College. After serving a pupilage with the North Eastern Railway at Newcastle-on-Tyne, he was employed with Sir John Jackson Limited on the extension of the naval dockyard at Devonport. In 1906 he again entered the service of the North Eastern Railway at Newcastle-on-Tyne, and three years later was appointed District Engineer of the Northumberland District, and, in 1913, District Engineer, Newcastle-on-Tyne. During the war of 1914-18 Mr. Harrison served in France on the staff of the Director-General of Transportation, with the rank of Major, R.E. On returning to railway service he resumed in his former position; and, in 1930, when the Northumberland and Newcastle-on-Tyne Districts were amalgamated, he was placed in charge of the combined area. In 1934 he became Assistant Engineer, North Eastern Area, and, in 1937, Engineer for the same area. He was appointed Assistant Chief Engineer in January, 1943. Mr. Harrison was President of the Permanent Way Institution from 1939 to 1942.

Mr. F. G. Humphrey, O.B.E., who recently was appointed Director of Information, Ministry of Transport, is well known among journalists in this country and in many other parts of the world. During his career he has filled almost every post in newspaper work, including those of Editor and Editor-Manager, and has worked in Scotland, Yorkshire, Liverpool, Birmingham, Manchester and London, covering assignments in all parts of Great Britain and many places abroad. He was President of the National Union of Journalists in 1936-37, Honorary Editor of its official journal, *The Journalist*, from 1937-40, and a member of its national executive committee from 1931-41. He joined the Ministry of Information in February, 1940, and in November, 1941, succeeded Brigadier-General Sir Wyndham Deedes as regional chief in London. Later the South Eastern Region was added to his jurisdiction; and for work in charge of the unified area, most of it connected with the state of emergency in that vulnerable and fiercely-attacked part, Mr. Humphrey was made an O.B.E. He also had much to do with establishing good relations between the U.S. Forces and the civil population in London and the south east. After the war, and just before the Ministry of Information became the Central Office of Information, he was transferred to headquarters as Director of the Campaigns & Lectures Division. He was largely concerned with the re-organisation of the department in its new guise before going to the Ministry of Transport as Director of Information, the new title given to the Director of Public Relations.

The Westinghouse Brake & Signal Co. Ltd. announces the appointments of Major L. H. Peter as Chief Development Engineer; Mr. L. E. Thompson, as Chief Electrical Engineer; Mr. K. H. Leech as Chief Design Engineer; and Mr. N. G. Cadman as Chief Brake Engineer.

We regret to record the death on April 26 of Sir Ernest Jardine, Bt., Chairman of the Trent Navigation Company, aged 87.

L.M.S.R. Staff Changes

Mr. C. Haysey, District Engineer, Barrow, to be District Engineer, Leeds, in place of Mr. H. Brown, retired.

Mr. G. F. Kent, Assistant to District Engineer, St. Pancras, to be District Engineer, Barrow.

Mr. S. Rigg, Superintendent, Goole Docks, to be Goods & Docks Superintendent, Wyre Dock, Fleetwood, in place of Mr. John Wood, retired.

Associated Electrical Industries Limited

The 47th annual general meeting of Associated Electrical Industries Limited was held at the Connaught Rooms, London, W.C.2, on April 23, the Rt. Hon. Oliver Lyttleton, M.P., Chairman of the company, presiding.

The Secretary, Mr. G. E. Walker, read the notice convening the meeting.

The Chairman, in moving the adoption of the report and accounts, said he had first to refer to changes in the board. In 1946, Vickers Limited acquired a stockholding in A.E.I. Thus an association of long standing had been cemented again by a financial interest, and both companies believed it would be of great mutual advantage. It clearly was desirable that Vickers should nominate one director to the board, and also that the managing directors of the British Thomson-Houston and Metropolitan-Vickers companies should sit on the board of the parent company. It was thought also that one vacancy should be created which should be unfilled for the present.

Since the board had reached already the numbers permitted, four directors decided to resign, Sir Louis Greig, Sir John Chancellor, Colonel Pragnell, and the Earl of Verulam. Their resignations had been accepted with deep regret. Lt.-General Sir Ronald Weeks, Deputy Chairman of Vickers Limited; Dr. H. Warren, Managing Director of B.T.H., and Mr. I. R. Cox, Managing Director of Metropolitan-Vickers, had been elected in their stead.

During the year, Sir Felix Pole retired from the deputy chairmanship, but retained his seat on the board. Sir George Bailey, the Managing Director, had been appointed Deputy Chairman in his stead, and now held both offices. In addition to the above appointments, Dr. H. Warren had been appointed Deputy Managing Director of A.E.I.

Lastly, Mr. R. H. Haviland, who as Secretary gave the A.E.I. group loyal service for 24 years, had retired, and Mr. G. E. Walker had been appointed in his place.

Conservative Financial Policy

Dealing with the report and accounts, the Chairman said the conservative financial policy pursued over many years of reinvesting in the business a large portion of each year's profits, had brought the actual capital employed far beyond the nominal capital which appeared in the balance sheet. They had published the figures, so that stockholders, customers, and employees should realise that the distribution now recommended was not an excessive percentage on the real capital which has been risked. It would be seen also that the dividends were a very small proportion of the wages, and it was worth remarking that the money reinvested or ploughed back into the business was one of the means by which continuity of employment was secured and expansion of employment promoted.

The gross trading profits were approximately the same as those for the year ended December 31, 1945, but the amount required to be set aside for income tax had fallen considerably. The additions to reserves and provisions this year in the group totalled £256,000, compared with £531,000, a decrease of £275,000. Allocations to general and special reserves, however, amounted to £606,000, compared with £413,000 in 1945. Last year the carry-forward was increased by £81,000, whereas it had now been increased by £260,000, or by £179,000 more this year than last. Adding these figures together, the appropriations and increase in carry-forward were £372,000 up compared with last year, and the allocations to reserve and provisions £275,000 down—a net increase of £97,000. In addition, they had depreciated their fixed assets this year by £667,000 compared with £553,000 last year, an increase of £114,000.

During the year the sum of £1,467,000, which related to tax paid whilst the rate was at 100 per cent. of excess profits, was received as an E.P.T. post-war refund. The conditions of this refund required it to be applied to re-equipment or development of the business. Accordingly, it had been placed to reserve, but more than this sum had been expended already on additions to fixed assets.

The gross profits of the holding company, including the dividends drawn from the subsidiary companies, were £2,282,000, compared with £2,084,000 for the previous year. The depreciation written off was approximately the same as last year, while additions to reserves and provisions were £123,000, compared with £341,000 last year, a decrease of £218,000. On the other hand, the appropriations to the general and special reserves were £475,000 compared with £150,000, an increase of £325,000, and the carry-forward had been increased slightly. The net increase thus was £107,000.

Effects of Fuel Crisis

Some of the A.E.I. group factories were unaffected by the fuel crisis; in some others—including Trafford Park and Rugby—partly by using stand-by plant and partly because they had taken the precaution of converting all their main factories from coal to oil-burning for heating and processing, they were able to maintain at work a high percentage of their total numbers. Some other factories, however, were shut down completely from lack of power. They continued throughout the stoppage to pay the guaranteed week of 34 hr. to those who could not be employed through the interruption or stoppage of power.

Referring to the fuel crisis reserve of £500,000 gross, the chairman said it was impossible to compute at the moment what the indirect losses from these causes might be, but the direct losses, that is to say, losses caused by the payment of wages to those who could not be employed, amounted to about £200,000 gross.

The year 1946 was the diamond jubilee of the British Thomson-Houston Company. They had published a volume to mark the occasion, and the book contained an appendix giving the names of those who had served the company for over 25 years. They numbered over 2,500. Further, to commemorate the occasion, the directors arranged a B.T.H. jubilee scholarship scheme to assist B.T.H. employees in the education and training of their sons or daughters of school-leaving age or over.

During the year a 44-hr. week of five days was negotiated between the Engineering Employers' Federation and the unions. They hoped and expected that output would increase in spite of the shorter hours. It was manifestly impossible to discuss the wide range and large extent of the A.E.I. group companies' activities, but he would draw attention to the education system which was in force in the group, and in which they took particular pride. By establishing schemes for the training of young men in the skilled trades, their companies had done much throughout the past half-century to revive and promote the interest in apprenticeship. Furthermore, they had been pioneers in the employment and training of University graduates. Many scientists and engineers now internationally famous, received their early training with their companies.

Reverting to the group as a whole, the orders on the books were considerably higher than last year, and in fact were the largest ever recorded in the history of the company. The directors recommended the payment of a final dividend of 7½ per cent. on the £6,000,000 ordinary stock, together with a bonus at the rate of 2½ per cent., both being less income tax at 9s. in the £. The total amount distributed in dividends on both classes of stock would amount to £612,446. The total amount out of their current profits placed to reserve or otherwise ploughed back into the business would be £866,000.

New Factories

During the year they had continued to attempt where practicable to bring the work to the workers. In order, amongst other things, to increase the space and labour available for the manufacture of heavy plant at Trafford Park, they had transferred part of the meter department to a temporary plant at Bury. This department, however, would be transferred permanently to a new factory of about 300,000 sq. ft. at Motherwell, and some other activities also would be concentrated in the same plant. This was the first time that their companies had embarked upon production in Scotland.

They also had leased a plant at Llandudno Junction, which would be used in the manufacture of commercial refrigerators amongst other products. Finally, production had started in factories in Sunderland and Hereford during the year; the one at Sunderland, under the auspices of the Cosmos Manufacturing Company, was engaged in the manufacture of radio valves; and the other, under Harcourts Limited, produced lighting equipment.

The Metropolitan-Vickers and the British Thomson-Houston companies specialised in the manufacture of steam turbo-generating sets, and they had, amongst others, a large number of sets in the process of manufacture for the grid, ranging from 75,000 kW. downwards.

Their business in transformers also had grown very largely. In gas turbines, there had been great progress in development by both the Metropolitan-Vickers and British Thomson-Houston companies, who were studying the further applications in the use of gas turbines for peak loads at power stations. The Metropolitan-Vickers company was developing and manufacturing in collaboration with the Great Western Railway Company, a gas turbine-electric locomotive for hauling express passenger trains up to 90 m.p.h.

The majority of electrical traction equipment on order was for export, and included orders in hand by the Metropolitan-Vickers company for a large number of 2,500-h.p. 3,000-volt locomotives for the South African Railways, and motor coach electrical equipment for South Africa, Australia and Brazil. The Metropolitan-Vickers company took over the Vickers train lighting business, which was being developed actively, and large orders for railway signalling equipment have been placed with the company's subsidiary, the Metropolitan-Vickers G.R.S. Company. The British Thomson-Houston Company had secured further substantial orders for control equipment for rolling stock, notably from London Transport.

The report and accounts were adopted.

Further Stages of the Transport Bill

Government maintains refusal of arbitration on compensation

Before the Transport Bill was considered on the Report stage in the House of Commons on Tuesday, it was re-committed in respect of certain Government and Opposition amendments.

Sir David Maxwell Fyfe (Con.—West Derby) moved an amendment which provided that the compensation of railway stockholders should be dealt with by an independent tribunal. This, he said, had hitherto been the accepted method of fair and unbiased arbitration. After four months consideration they were still of opinion that not only was the compensation inadequate, but the method by which it was thought to arrive at this compensation was unprecedented, inequitable, and wrong.

They asked, he said, for a tribunal composed on the lines of that in connection with the Cable & Wireless measure, of three members—one a High Court judge, nominated by the Lord Chancellor, an accountant nominated by the President of the Institute of Chartered Accountants, and a business man nominated by the Chairman of the Bankers' Clearing House Committee.

Mr. E. Davies (Lab.—Enfield), opposing the amendment, said that if it were proposed that the assessment of compensation be referred to an arbitrary tribunal and the Opposition thought that that would result in greater compensation to the railways, it would mean that the Transport Commission would have to be subsidised by the State. If there was going to be any subsidisation of transport it must not be in the interests of the shareholders. If it was necessary to subsidise transport it should be to enable charges to be kept down so that the cost of living should not increase.

Challenge to Basis

Mr. Glenvil Hall (Financial Secretary to the Treasury), resisting the amendment, said it challenged the whole basis of compensation in the most important clause in the Bill. The amendment would give such a tribunal an impossible task. The Stock Exchange could be described as an independent tribunal in that it laid down what was reckoned to be from day to day the values placed by a willing buyer looking for a willing seller. The Government had no objection to the formula of net maintainable revenue as such, but in these circumstances, with these undertakings and in this Bill it was quite impossible to adopt the net maintainable revenue formula.

It might be argued that the railways would be able to increase their revenue if they were allowed to increase their charges, but it could be argued that there was a serious limitation to the increases which railways could impose in the way of extra charges. It was possible that under the free play of competition between road and rail that the future net maintainable revenue would give stockholders much less than they were going to get under the formula which the Government proposed.

Mr. R. Assheton (Con.—City of London) said that whereas the costs of the railway companies were about double what they were, their receipts from fares and rates charged and so on had not risen by more than 33 per cent. Why were the Labour Members so frightened of having a tribunal? Did they think the figure a tribunal would give would be better than that given by the Government? If they were frightened of a tribunal it could only be because a tribunal would give better justice than the Government.

Mr. D. Jay (Lab.—Battersea N.) said there were no confiscatory elements in the proposals. The valuation given was higher than the level at which those prices had stood for the last 15 to 20 years.

Sir Waldron Smithers (Con.—Orpington) protested against what he described as the confiscatory procedure adopted under the Bill and said that great hardship would be caused to those who had invested money in the property to be taken over by the Government.

Mr. J. M. McKie (Con.—Galloway) said that railway shareholders were going to be in danger of a measure of confiscation. Under the L.M.S.R. 4 per cent. preference stock, the holders had always received their 4 per cent., but now they would have to take their chance under a Socialist administration with their income reduced to 2½ per cent. There was £118 million invested in that issue, he believed.

Future Prospects

Mr. J. A. Sparks (Lab.—Acton) believed that the stockholders were very fortunate that the Government had decided on nationalisation at this particular time because, had they waited another five or ten years, the value of their interests would be very considerably reduced. It had been difficult for the railways to get sufficient capital to modernise their enterprises. They could get plenty at 5 per cent. or over, which was above the capacity of the industry. He inquired whether the Opposition advocated an increase in rates and charges because that was the only method open to the existing proprietors to secure a maintenance of the net annual revenue. He said that every time rates and charges were increased traffic was turned away from the undertakings.

Mr. Barnes (Minister of Transport) refuted the accusation that the compensation, as applied to the railways, amounted to confiscation. "The payment in the form of compensation of a sum of £908 million is rather a peculiar method of confiscation," he commented.

The Opposition was complaining because it had not got the compensation terms that probably it would have given to the stockholders of the railways if it had been carrying through a Bill of this kind, although he could not imagine it carrying through such a Bill.

Mr. Barnes described as "quite unacceptable" the idea that because an investment had earned 4, 5 or 6 per cent., it should continue to do so when it was transferred from private to public ownership. In reply to an interjection by Colonel A. D. Dodds-Parker (Con.—Banbury), Mr. Barnes said: "I think the Government of the day, if it has the will of the people behind it, can do anything it likes with regard to the services that are necessary to the interests of the whole community."

Colonel Dodds-Parker: "Without arbitration?

Mr. Barnes: "Yes, if it feels that arbitration is not necessary."

Mr. Barnes said that earning capacity of the railways was a difficult thing to assess at the moment and he would hesitate to ask what the net revenues of the railways would have been in the immediate future. The railways were labouring under conditions in which they could not spend the depreciation reserve to bring their rolling stock, their permanent way, and other things into good conditions. The railway companies had suffered heavily as the result of the war. Commenting that the 1921 Act left out of account entirely the problem of road competition, Mr. Barnes said the capacity of the railway companies to appeal to the public for capital was unfairly interfered with, and with the railways in their present plight of overstrain, it was unlikely that they would be in a position in the near future to improve their situation. The State could raise capital at a lower rate of interest and persons who accepted the British Transport stock got a greater security with a Treasury guarantee behind it.

Sir John Mellor (Con.—Sutton Coldfield) complained that the House had not been told, and was not going to be told until the Treasury made a decision later on, what rate of interest was going to be paid on compensation stock, what amount of compensation stock was going to be issued, or what would be the terms of redemption. It was quite possible, he suggested, that the issue of the compensation stock might be followed by heavy selling in the market and it might be that the shareholders would find it impossible to realise their compensation if it was a long-dated stock. There ought to be some assurance that the stock was not going to be long-dated or even medium-dated, but that it was going to be short-dated, and something redeemable within 10 years.

Mr. C. Williams (Con.—Torquay), referring to an earlier statement by the Minister of Transport that propaganda was being used on behalf of railway stockholders, said that he had been very glad to be able to put in a word on behalf of those people whom he felt had been unfairly treated. "I wonder what would be the result of an inquiry into consideration given by the Government and its supporters to these people, and what would be the result of an inquiry into the consideration by the Government and its supporters of members' salaries and that of the Prime Minister," he asked.

The Opposition amendment was defeated after a division by 268 votes to 121.

Interest on Stock

Brigadier J. S. B. Lloyd (Con.—Wirral) moved a further amendment dealing with compensation. Its purpose, he explained, was to provide that the Government stock with which railway stockholders are to be compensated shall yield the same amount as the railway stock for which they are substituted. If the holder of £1,000 worth of railway stock, yielding £30, was given only £1,000 worth of 2½ per cent. stock at present, his income, instead of being £30, would be only £25.

Mr. Glenvil Hall, declining to accept the amendment, said there was an assumption which he could neither deny nor confirm, that the stock was going to be issued at 2½ per cent. There was nothing in the Bill to that effect or that it would be issued at the rates prevailing as and when the time came for its issue. The rate of interest then might be three. The Chancellor, on consideration, came to the conclusion that the option he was giving was fair and just.

The amendment was defeated by 274 votes to 114.

Mr. Assheton, making "a further attempt to get justice for stockholders," moved an amendment regarding compensation payable in respect of loans, perpetual annuities, or debenture stocks. It provided that these should bear interest which would assure to holders the equivalent of the annual interest payable on their securities for the last complete year before the passing of the Act. He said it seemed

extraordinary that the Government was going to take over all the assets of the railway companies but not the obligations.

Mr. Glenvil Hall said that it asked that a new type of British transport stock should be brought into being which was different from that envisaged in the Bill. There was a Government guarantee attaching to the stocks which had been placed in a special category, but there was no Government guarantee in this case, and therefore there was no analogy between the two classes of stocks. These stocks were fairly valued on the Stock Exchange, and the price then quoted, which had been accepted in this Bill, could be taken as a fair price. It would be unfair to other types of stock if this particular type of security was picked out for special treatment.

Mr. Gallacher's Suggestion

Mr. W. Gallacher (Com.—West Fife) said: "Here is a question of the nation taking over its own property. It is a social project. But what are we to do with the debenture holders? I say give the debenture holders the full amount they are getting now as a life annuity. The full amount they are getting now, every halfpenny, I would give them, but at the end of their life it finishes." Of the trustees, Mr. Gallacher said that the Chancellor of the Exchequer should make an arrangement covering a particular period after which the trustee should not be allowed to draw on the resources of this country. "I want the Chancellor and the Government to face up to the fact that it isn't right, it isn't just, to saddle the people of this country with pensions in perpetuity as compensation," he declared.

Mr. W. T. Proctor (Lab.—Eccles) said the Opposition wished to hand over to those who had those stocks, a more valuable consideration at the expense of the nation. The Government, on the other hand, wished to be perfectly fair both to the nation and to the holders of that stock.

The amendment was defeated by 285 votes to 118 votes.

Mr. Barnes, on Clause 25, relating to the application to local authorities, moved an amendment making provision for additional compensation to local authorities over and above meeting their sinking fund debt charges. The Minister of Fuel & Power had stated during the Committee stage of the Electricity Bill that £5,000,000 would be set aside for additional compensation to meet overhead expenses that local authorities might incur as the result of the transfer of their electricity undertakings. For the time being, he (Mr. Barnes) proposed to set aside £2,500,000 for the purpose of making similar compensation payments to local authorities in respect of their transport undertakings. But he wished to make it plain that it would not be until the various schemes arose that the payments would be made. According to the type of scheme that was evolved to deal with ports and harbours there might be some similar compensations in that direction, and £200,000 was anticipated as being likely to meet those charges.

The amendment was agreed to and the clause, as amended, was ordered to stand part of the Bill.

Mr. Thorneycroft (Monmouth—C.) moved an amendment on clause 46 to increase the compensation payable to road hauliers. He proposed that the goodwill should be calculated at between five and seven-and-a-half times the net annual profit. Road hauliers had as much right to their goodwill as other traders, and under the Bill their businesses were being expropriated. The Government's proposals were unjust and would create the maximum of hardship.

Government Generosity

Mr. G. R. Strauss (Parliamentary Secretary, Ministry of Transport) said the Government were erring if at all on the side of generosity. Road transport was a new and exceedingly unstable industry, with great competition. Compensation was to be payable on the following bases:—On vehicles, current replacement value less depreciation; on all other property, the present market value; and for goodwill, the equivalent of anything between two and five years' average profit. This estimate of road transport profits was not only the Government's estimate but the industry's as well, for frequently firms changed hands with the goodwill based on three years' purchase.

Sir D. Maxwell Fyfe said that from the human aspect this was one of the crucial points of the Bill. The industry, far from being unstable, was the very opposite. The Bill did not suggest the method by which co-ordination or integration of road transport was to be made with the railways, and the Opposition, after asking for four and a half months, had been unable to ascertain how the Government proposed to decentralise and make a local allocation of road transport, or on what basis charges for road transport were to be made.

The amendment was negatived by 293 votes to 130. An alternative proposal that compensation should be based on 15 years' purchase of the average net annual profits was rejected by 293 votes to 128.

Clause 46, as amended, was ordered to stand part of the Bill by 292 votes to 133.

Sir D. Maxwell Fyfe, on Clause 53, moved an amendment to provide that compensation should be payable to road hauliers in respect of cessation of business.

Mr. Barnes said that if the Road Haulage Organisation ignored his offer of full access to him and his Department for the examination of technical points of compensation and other matters and embarked on a raging, tearing campaign throughout the country, it was no reflection on him or the Government. The Road Haulage Organisation had made recent representations to see if some modification of the proposals in the clause could apply, and that was now being discussed.

The amendment was negatived by 295 votes to 130.

On the motion that the clause stand part of the Bill,

Mr. H. Macmillan (Bromley—C.) said that Mr. Barnes had complained that the road hauliers had undertaken a campaign against the Bill, and had not accepted his invitation to come to terms and do some private deal with him to mitigate the injuries done by the Bill. Mr. Barnes had also said that he would not now do the equitable thing for them, but would chastise them still more because they had not gone behind the scenes with him. That seemed to be adding blackmail of the worst and filthiest kind.

The clause was ordered to stand part of the Bill by 285 votes to 125. Consideration of the Bill was then adjourned.

When consideration of the Bill was resumed on Tuesday, on the Eighth Schedule (Orders giving effect to schemes), Mr. Renton (Huntingdon—L. Nat.) moved the first of a series of amendments which, he said, would provide a workable and fair scheme for compensation of road passenger transport undertakings not owned by local authorities. These undertakings probably possessed between them up to £15,000,000 worth of subscribed capital, and their total capital assets might be in the neighbourhood of £40,000,000 or £50,000,000 The compensation of these undertakings was entirely a matter for the discretion of the Minister. He was to be the judge in his own cause, and there was to be no appeal whatsoever from the decision he made.

The amendments provided for compensation on the same basis as for road hauliers; except that there was a depreciation allowance of 20 per cent. per annum instead of 15 per cent. in regard to compensation for total or partial cessation of business on transfer, the amendments adopted the same principle as in road haulage businesses, but proposed that the average net annual profits should be multiplied not by two or five, but by eight. A road hauler's business was a fluctuating one; but a passenger transport concern was a stable and certain undertaking. Many people had regarded such concerns as a safe investment and compensation should make allowance for that.

Government Attitude

Mr. G. R. Strauss said the Government was convinced that great benefit to the public could be brought about by the co-ordination of the existing road passenger services, but before the schemes came into operation they must be given the most careful consideration by the Commission. There was an enormous variety in the types of buses concerned—there was the huge combine and the one-man service. Another difficulty was that it was not known what the new organisation was likely to be and whether services were to be taken over completely or partly. In some parts of the country it might be five years before the new organisation could be set up.

In view of those difficulties the Government had felt it inadvisable up to now to put in the Bill any firm or price basis of compensation for the bus companies which might be taken over in three to five years' time.

The amendment was negatived by 314 votes to 138.

When the amendments for which the Bill was recommitted were concluded, the Report stage was begun.

Sir D. Maxwell Fyfe said:—At 8.15 p.m. on the second of the three allotted days we now start the Report stage of this Bill. We have got up to 2 o'clock to-morrow morning and five hours to-morrow, and there are still 350 amendments to be dealt with. How grossly inadequate is that time for matters which touch so nearly the lives of millions of people in this country.

He moved an amendment to Clause 1, which authorises the setting up of a British Transport Commission, requiring the five members to give their exclusive services to the Commission. This was to be a great public corporation, he said, yet it was suggested that these five men were to be free to hold other occupations. They were not to be conflicting occupations, but where would the line be drawn? The only conclusion one could draw from the proposals in the Bill was that the Commission would merely be the mouthpiece of the Minister and of Whitehall.

Sir A. Salter (Oxford University, Ind.) said he reluctantly supported the amendment. Some part-time members of the Commission would be useful, but it was unreasonable and illogical that the Minister should insist on being bound by statute to having no more than five members on the Commission and should equally insist

on the option of making them part-time or whole-time.

Mr. Barnes said that one of the reasons why only five persons were to form the Commission was to ensure that it carried out its important task as a policy-making body. It was the Government's intention that the five members should be full-time to start with, but there would be freedom in the future to deal with any circumstances that arose.

The amendment was negatived by 317 votes to 140.

The debate was adjourned until Wednesday.

Parliamentary Notes

L.M.S.R. Bill

The North Wales Power Co. Ltd. has withdrawn its petition against the London Midland & Scottish Railway Bill.

Transport Bill Financial Resolution

In the House of Commons on April 23 in committee, Mr. Alfred Barnes (Minister of Transport)) moved a new financial resolution in connection with the Transport Bill, which he said was to meet an undertaking he had given in committee to Brigadier Sir George Harvie Watt (Richmond—C.). He said it had been the practice of the railway companies to use the funds of the railway savings banks in their general accounts, and the original financial resolution which dealt with temporary borrowings did not make provision to continue that practice. He was informed that in the savings bank account there was approximately £45 million, and in the pension fund the figure was something like £75 million. By this resolution the British Transport Commission would continue the existing practice and use those funds, and they would not be classified under the figure of £25 million temporary borrowings.

With regard to the financial resolution, paragraph (*a*) repeated that part of the original financial resolution, and it was there to bring the resolution back to the original resolution. As to paragraph (*b*), under section 21 of the Railways Act, 1921, Railway Rates Tribunal staff was limited to ten persons. Various sections of industry and traders generally interested in the work of the Tribunal considered that the staff was inadequate. Therefore, to enable the Tribunal to increase its staff, they had introduced this paragraph.

The remaining paragraphs gave effect to his earlier remark, and permitted the Transport Commission to use the pension funds and savings bank funds without their being classified as temporary borrowing.

Mr. Oliver Poole (Oswestry—C.) said that according to the statement of the Minister the financial resolution referred only to two matters—savings banks, and the minor point of enabling more staff to be given to the transport Tribunal. He understood there were other points which were to be brought forward on a later stage.

Could the Minister say whether in fact they were covered under the old financial resolution or whether the new resolution covered all the points raised in the various new clauses which he had tabled?

Mr. Barnes said this financial resolution covered only the points he had referred to. The original resolution covered all the other necessary points.

The resolution was agreed to.

The resolution passed the report stage on April 24.

Questions in Parliament

Reservation of Railway Seats

Mr. J. A. Sparks (Acton—Lab.) on April 21 asked the Minister of Transport, in view of the restriction of summer passenger train services on the four main-line railways, if the practice of advance booking of seats on certain trains would be continued.

Mr. Alfred Barnes: I regret that, owing to the reduction in railway services during the summer months, the reservation of seats on trains will, with certain exceptions, be discontinued from June 16 next, when the summer timetables come into force. The arrangements will be announced later.

Mr. Sparks: Will the Minister say what the exceptions are, or will they be announced later?

Mr. Barnes: They will be announced with the full information.

Production of Steel Wagons

Group-Captain C. A. B. Wilcock (Derby—Lab.) on April 15 asked the Minister of Transport whether he was aware that production of 16-ton all-steel coal wagons at Derby, L.M.S.R., Works was curtailed because of a shortage of steel; and what steps he proposed to take to ensure that sufficient steel was allocated to the carriage & wagon works, Derby, to ensure that full production in this important matter of coal wagons could be proceeded with.

Mr. Alfred Barnes stated in a written answer: Yes, and steps have been taken to ensure, as far as practicable, that steel will be available for the programme of construction of coal and mineral wagons.

Concrete Railway Sleepers

Lt.-Colonel Granville Sharp (Spen Valley —Lab.) on April 24 asked the Minister of Works why it was proposed to spend £1,000,000 on pre-stressed concrete sleepers for re-sale to railway companies for £700,000; whether those were more expensive than wooden sleepers; and why an economic price was not charged.

Mr. C. W. Key (Minister of Works) in a written answer stated: Pre-stressed concrete sleepers are being ordered owing to the serious shortage of wooden sleepers. They are more expensive than wooden sleepers, but their cost cannot yet be finally determined. The full cost will be charged to the railway companies, and it is expected that £700,000 will be recovered in 1947-48.

Radio Communication for Railways

Sir Ralph Glyn (Abingdon—C.) on April 15 asked the Assistant Postmaster-General when he would be able to allocate suitable wavelengths to the railways to enable them to carry out preliminary trials and further research into the prospects of adapting radio communication for railway purposes.

Mr. Michael Stewart (Vice-Chamberlain of the Household), who replied for Mr. W. A. Burke (Assistant Postmaster-General), said: It is hoped to make some wavelengths available to the railway companies during the next few weeks. These wavelengths will be liable to alteration, however, in the light of the conclusions of an International Radiocommunication Conference which is to be held during the summer of this year.

Sir Ralph Glyn: Can Mr. Stewart say whether a decision will be made before the conference takes place?

Mr. Stewart: It is hoped to make some wavelengths available during the next few weeks. These are among the proposals which this country has tabled for the consideration of the conference. It may be that some alterations will have to be made when the conference meets, but it is hoped these will be of a minor character.

L.M.S.R. Pension Payments

Mr. W. McAdam (Salford North—Lab.) on April 21 asked the Minister of Transport if he was aware that the London Midland & Scottish Railway Company had reduced the *ex gratia* payments to retired servants of the old Glasgow & South Western Railway Company because of the increased pensions now being paid under the Government's national insurance scheme; and, as those pensions had been granted by the Glasgow & South Western Railway Company, before the passing of the Railways Act, 1921, and were for services rendered, what action he would take to ensure that the L.M.S.R. carried through the obligation imposed by the Railways Act, 1921.

Mr. Alfred Barnes: I am informed that no alteration has been made by the L.M.S.R. to pension payments to men who retired from the Glasgow & South Western Railway Company, that is, before 1925. The second part of the question, therefore, does not arise.

Mr. McAdam: Is the Minister not aware that I have already supplied him with the information that these pensions have been reduced?

Mr. Barnes: No, I am not aware of that. This is the information submitted to me. If Mr. McAdam says that there is definite information to the contrary, I will personally look into the matter.

Mr. McAdam: But I have already supplied the Minister with the information.

Acquisition of Railway Air Services

Air-Commodore A. V. Harvey (Macclesfield—C.) on April 2 asked the Parliamentary Secretary to the Ministry of Civil Aviation what compensation had been paid for the taking over of Railway Air Services and Allied Airways.

Mr. G. S. Lindgren (Parliamentary Secretary to the Ministry of Civil Aviation): As my predecessor explained to the House during the passage of the Civil Aviation Bill, offers had been made to the internal airlines of this country which were operating on November 1, 1945, that they should each be acquired as going concerns at a price to be determined as between a willing buyer and a willing seller. Agreement on a price was subsequently reached with the group of companies comprised under the Associated Airways Joint Committee, and the transfer of the ownership of the undertakings to the British European Airways Corporation took place on February 28, 1947. The agreed price was £550,000, subject to verification of the liquid assets by a chartered accountant. In the case of the other company, Allied Airways (Gandar Dower) Limited, negotiations with the company are proceeding.

Workmen's Compensation for Kenya Railway Employees

The Reverend R. W. Sorensen (Leyton West—Lab.) on February 5 asked the Secretary of State for the Colonies, in view of the absence of a system of workmen's compensation for employees on the Kenya railways and in Government workshops, if steps would be taken by the Kenya Government to ensure workmen's compensation for its own employees; and to extend the principle by legislation to cover other employees.

Mr. A. Creech Jones (Secretary of State

for the Colonies) stated in a written answer: The Government of Kenya has recently enacted an Ordinance to provide compensation to workmen for injuries suffered in the course of their employment. Employees on the railway and in the Government workshops are covered by the Ordinance, which is expected to be brought into operation shortly. In the meantime, cases involving Government and railway employees are being dealt with by administrative action, on the basis of the scale to be introduced by the Ordinance.

L.M.S.R. Ambulance Shield Final Competition

The L.M.S.R. Ambulance Shield final competition was held at Belle Vue, Manchester, on April 25, and was attended by Sir Robert and Lady Burrows and other officers of the company. This was the second post-war competition, and on this occasion more facilities were available, which resulted in a greatly improved setting. The organising of the event called for a special word of praise from Sir Robert Burrows for Mr. G. S. Hill, General Ambulance Secretary of the L.M.S.R.

Mr. H. J. Comber, Chief Officer for Labour & Establishment, presided at the prize giving, and the prizes were presented by Lady Burrows, who afterwards expressed her admiration of the high standard and valuable work of the competing teams. The Judges were as follow:—Team Test—Dr. C. Gordon Lewis, M.D., M.R.C.S., L.R.C.P., F.R.C.S.(Newcastle); Individual Test—Dr. R. A. Dench, B.A., M.B., B.Ch., B.A.O.(York); Viva Voce Test—Dr. J. Welsh, M.R.C.S., L.R.C.P. (Llanfairfechan).

The highest available marks were 450, and the result of the competition, with marks gained, are as follow:—

1	Crewe Works Machine Shop " A "	400½
2	Wolverton Works	393
3	Bolton Loco.	371
4	Horwich Works (Machine Shop)...	356
5	Camden Goods " A "	344½
6	Liverpool Exchange	339½
7	Crewe Works (Machine Shop " B ")	332½
8	Nuneaton Traffic	332½
9	Earlstown Works	314

A feature of the proceedings was the very friendly atmosphere between the high officials of the company and the employees.

Check-Rail Oilers on London Transport Railways

The London Passenger Transport Board has on the older sections of its railways numbers of sharp curves, which in addition to causing increased rail wear, were a source of annoyance owing to squealing and other noises which were liable to arise when trains passed round them.

The benefit of lubrication was evident, and after experiments had been made with various forms of oiler for the check rail, a design was introduced in 1934 which had no moving parts, the lubrication being carried out by a pad wrapped round a sponge rubber core partly immersed in oil. The pad was thus kept well oiled, and was adjusted so that the inner side of the flange of passing wheels made contact with it and picked up a small quantity of oil, which was carried round to lubricate the vertical face of the check rail.

It has been the practice for a number of years to lubricate the high rail on the running edge by normal wheel flange oilers on the track. The lubrication of both the high rail and the check rail gives improved running round the curves, but any roughness of the inside of the wheel flange was found to cause appreciable wear on the sponge rubber and felt pad.

A more economical arrangement now has been devised, which comprises a pad suspended on springs, making contact with the inner side of passing wheel flanges. Some experimental use of the spring-supported pad has been made, and more extended tests are now in hand. In addition, some improvement in the form of the oil container has been made, to give protection against the entry of rain water. It seems likely that two of these boxes installed at the entry of curves will be sufficient in most cases. A screw device is provided in the mounting of the box, so that adjustment of the position can be made readily.

Notes and News

Hurst, Nelson & Co. Ltd.—An interim ordinary dividend of 5 per cent. has been declared for the year ending July 19, 1947.

Temporary Civil Engineering Assistants Required by the L.P.T.B.—Temporary civil engineering assistants are required on the staff of the New Works Engineer of the London Passenger Transport Board. See Official Notices on page 459.

Chorley Wagons Limited.—At a recent extraordinary general meeting of Chorley Wagons Limited a special resolution was passed to the effect that the company be wound up voluntarily and that Mr. H. J. T. Day, of 18, Bennetts Hill, Birmingham, Chartered Accountant, be appointed liquidator.

L.M.S.R. Service for British Industries Fair.—For visitors to the Castle Bromwich (Birmingham) section of the British Industries Fair, the L.M.S.R. will run a through restaurant car service, leaving Euston at 8.45 a.m. and Willesden Junction at 8.58 a.m., every weekday (except Saturday, May 10) during the period of the Fair (May 5-16). The train will reach Birmingham New Street at 11.5 a.m., and Castle Bromwich at 11.23 a.m. The return service will leave Castle Bromwich at 6.5 p.m., and Birmingham at 6.27 p.m., reaching Willesden at 8.49 p.m. and Euston at 9.2 p.m.

Hunslet Locomotives for Algeria.—The Hunslet Engine Co. Ltd. is building 11 straight diesel locomotives of 200 b.h.p. for French purchasers. Ten of these locomotives are to be shipped to Algeria, and the remaining one to France. Gardner oil engines of the 8L3 type are being incorporated, and they will drive the wheels through a Hunslet four-speed transmission.

Railway Students' Association.—The annual convention of the Railway Students' Association will be held this year at Darlington from May 17 to May 21. In addition to visits to centres of transport interest in the district, papers on railway topics will be read and discussed during the convention. Mr. T. B. Hare, Principal of the L.N.E.R. All-Line Operating School at Darlington, will deal with "Railway Operation in the Darlington District"; and Mr. H. F. Sanderson, Principal of the L.N.E.R. All-Line Commercial School, will read a paper on "The Transport Requirements of Heavy Industries."

Mobile Generator Sets for the Royal Train.—A problem connected with the servicing of the Royal Train in South Africa was the way in which the batteries which provided current for lighting and other services were to be recharged during the time the train was stationary for long periods. It was decided that the solution would be to place 12 mobile petrol-electric generating sets at points along the route. At first, there was considerable doubt as to whether the generators could be delivered by the required date, but in the end the Associated British

New Vessel for Newhaven-Dieppe Service

M. Lemaire, General Manager, French National Railways, with Sir Eustace Missenden, General Manager, Southern Railway, on board the ss. "Londres" at Newhaven *(see also page 447 and last week's issue)*

Trading Corporation Limited, Duke Street, London, S.W.1, agreed to supply them. This company marshalled the combined resources of a number of contractors, and as a result the 12 sets, each comprising a four-cylinder petrol engine of 15·4 h.p. at 2,000 r.p.m., coupled to a compound-wound generator of 8 kW. at 110/150 volts, together with switchgear, mounted on a special type of trailer, were assembled, tested, and approved within the allotted time.

L.P.T.B. Public Relations.—Applications are invited for a post in the office of the Press and Publications Officer of the London Passenger Transport Board. Candidates must have first rate journalistic experience, be interested in transport and industry, have the ability to collect facts and give a clear exposition of industrial, technical, and engineering matters. See Official Notices on page 459.

Macrome Steel Treatment.—All cutting tools made by Macrome Limited, Aldersley, Wolverhampton, are subject to special treatment after the usual hardening, tempering, etc., processes have been carried out, to increase their resistance to wear, fatigue, and breakage. Details of this treatment will be given on the Macrome stand at the British Industries Fair. We have been notified that this firm will be showing, also, a wide range of tools, including milling cutters, reamers, hacksaw blades and handsaws, butt-welded lathe tools, hand drills, planes, etc., and a Model 3 tool kit complete in cabinet.

"Industrial Wales" Exhibition.—The Industrial Association of Wales & Monmouthshire, a newly-constituted body which unites two associations previously operating separately in North and South Wales and Monmouthshire, is sponsoring and organising "Industrial Wales," an All-Wales exhibition of post-war production and development, at Empire Hall, Olympia, London, from August 28 to September 13 this year. There will be a comprehensive display of the Principality's new light industries, in addition to latest developments in its traditional heavy industries. All firms with manufacturing interests in Wales and Monmouthshire, it is stated, are eligible for exhibition space.

International Union of Public Transport.—A conference of the International Union of Public Transport will be opened at Montreux on September 15. The draft programme includes visits to the Ateliers de Secheron and Forces Motrices de Verbois, at Geneva; the aluminium works at Chippis; the Swiss Federl Railways; the new installations of the Montreux-Berne Oberland Railway; and the new improvements of the Zurich public transport undertaking. Papers regarding these visits will be read by Swiss delegates, and will be followed by discussions. The last night of the conference probably will be spent at Lucerne. The conference will last four or five days, but facilities will be given to members wishing to prolong their stay in Switzerland.

Skal Club of London.—The Skal Club of London is a member club of the Association Internationale des Skal Clubs (A.I.S.C.). The objects of the Skal movement are to create and develop the spirit of unity, goodwill and fellowship between all travel and transport representatives, and to endeavour to promote the interests of travel, both national and international. The Skal Club of London was formed in 1934. Its club premises were given up at the end of 1939, and the club held no meetings during the war. The first general meeting since the war was held in February, 1946, when 44 former members attended. So far, some 90 former members have signified their intention of rejoining. Plans are being made to accumulate funds with the object of obtaining premises again. The Honorary Secretary of the club is Mr. R. A. Smyrk, Thos. Cook & Son Ltd., Berkeley Street, London, W.1, from whom any further information about the club or the Skal movement in general may be obtained. The following officers of the Skal Club of London have been appointed for 1947:—

President, Mr. R. W. Waugh; Chairman, Mr. J. N Bamford (Air France); Honorary Secretary, Mr. R. A. Smyrk; Honorary Treasurer, Mr. A. J. Turner (Thos. Cook & Son, Ltd.); Vice-Chairman, Mr. G. L. Walter (B.O.A.C.).

High-Temperature Alloys.—We have been informed that a feature of the stand of Henry Wiggin & Company at the British Industries Fair will be the Nimonic series of alloys originated by the Mond Nickel Company during the war for stressed parts operating at high temperatures in gas turbines. Other exhibits will comprise electric resistance materials, including Brightray nickel-chromium alloy for high-temperature heating elements, and the Ferry nickel-copper alloy, which has a low-temperature coefficient of electrical resistance. Alloys for electronics, and thermostatic alloys of the Nilo and Ni-Span series will complete this display.

Scottish Branch of British Aluminium Company.—As from July 1 next, the Scottish business of the British Aluminium Co. Ltd. will be transacted through its own branch office in Glasgow. The firm of Alexander Brown & Company, selling agents for the British Aluminium Company in Scotland for over 50 years, will relinquish the agency, but will continue to act as principal stockist in Scotland for the products it has been handling in the past. The new branch will be located at 113, West Regent Street, Glasgow, which also is the office of Alexander Brown & Company; and Mr. Peter J. Ferguson has been appointed Manager.

English Electric Co. Ltd.—The accounts of the English Electric Co. Ltd. for the year ended December 31, 1946, shows a net profit of £492,775. Dividends will be paid on the 6½ per cent. and 3¾ per cent. preference stock, and a dividend of 10 per cent. on the ordinary stock. After allocating £100.000 to general reserve, the carry forward of £123,673 compares with £120,793 in 1945. A net dividend of £59,990 appears in the accounts from Marconi's Wireless Telegraph Co. Ltd., the share capital of which the company acquired during the year. In consequence of this acquisition, the issued capital has been increased from £3,494,998 to £6,174,575.

Imperial Chemical Industries Limited.—A preliminary statement has been issued showing that net income for 1946 was £7,171,109, compared with £4,770,062 for the previous year, an increase of £2,401.047. Including £1,337,280 brought in, there is an available balance of £8,508,389, as against £8,554,867. A further special appropriation of £1.500,000 has been made to obsolescence and depreciation. The final dividend on the ordinary capital is maintained at 5 per cent., and, together with a bonus of 2 per cent. and the interim payment of 3 per cent., makes 10 per cent. for the year. The total distribution for the previous eight years has been 8 per cent., no bonus having been paid.

Stanton Concrete Lighting Columns.—The main exhibit of the Stanton Ironworks Co. Ltd. at the British Industries Fair will consist of spun-iron pipes and flexible joints. We have been informed, however, that spun-concrete lighting columns also will be shown, and it is of interest to recall in this connection that the centrifugal method of manufacturing concrete has

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices Apr. 29 1947	Prices Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	55	—
5% Con. Pref. ...	126½	107	120½	— 1
5% Red. Pref. (1950)	106½	102½	102½	—
5% Rt. Charge ...	140½	122½	135½	—
5% Cons. Guar. ...	137½	118½	132½	—
4% Deb.	129½	106	124½	—
4½% Deb.	129½	107	124½	—
4½% Deb.	130½	114	125½	—
5% Deb.	142½	125	137½	—
2½% Deb.	95½	81½	92½	—
L.M.S.R.				
Ord.	30½	26½	27	—
4% Pref. (1923) ...	64	52½	59½	—
4% Pref.	86	75½	80½	—
5% Red. Pref. (1955)	105½	97	101½	—
4% Guar.	108½	100	102½	—
4% Deb.	120	103	113½	—
5% Red. Deb. (1952)	108½	105½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	7	5	6⅝	—
Def. Ord.	3½	2½	3½	—
4% First Pref. ...	59½	50½	54½	—
4% Second Pref. ...	29½	25⅝	27	—
5% Red. Pref. (1955)	104	97	98½	—
4% First Guar. ...	107	98	101½	—
4% Second Guar. ...	101	90	95½	—
3% Deb.	104	87½	98½	—
4% Deb.	119½	102½	113½	—
4½% Sinking Fund Red. Deb.	107½	101½	103½	—
SOUTHERN				
Pref. Ord.	79½	70	73	— ½
Def. Ord.	24	19½	22	—
5% Pref.	125½	107	119½	— 1
5% Red. Pref. (1964)	115½	106½	111½	—
5% Guar. Pref. ...	137½	119	132½	—
5% Red. Guar. Pref. (1957)	115½	107½	111½	—
4% Deb.	129½	105½	124½	—
5% Deb.	159½	125½	135½	—
4% Red. Deb. (1962-67)	113½	104½	110½	—
4% Red. Deb. (1970-80)	115½	104½	111½	—
FORTH BRIDGE				
4% Deb.	109	103	103½	—
4% Guar.	105	102	99½	—
L.P.T.B.				
4½ "A"	133½	120½	128½	—
5% "A"	142½	130½	137½	—
3% Guar. (1967-72) ...	108	98½	104½	—
5% "B"	128½	117½	124½	—
"C"	64½	56½	62½	—
MERSEY				
Ord.	34	30	34	— ½
3% Perp. Pref. ...	76	69	72½	—
4% Perp. Deb. ...	117½	103	111	—
3% Perp. Deb. ...	98	81	92½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41⅞	30½	27½	— 1½
Pref.	63⅜	52	48½	— 2
Guar.	97½	78½	87	— 3
Deb.	107	97½	104½	—
IRISH TRANSPORT				
Common	19/2½	16/9	15/9	—
3% Deb.	107	100	105	+ ½

* Latest available quotation

OFFICIAL NOTICES

LONDON PASSENGER TRANSPORT BOARD. Applications are invited for posts as Temporary Civil Engineering Assistants on the staff of the New Works Engineer.

Salary range up to £550 per annum, commencing salary according to ability, qualifications, and experience.

Successful candidates will be required to pass a medical examination. Canvassing, either directly or indirectly, will disqualify.

Applications giving particulars of experience, qualifications, present remuneration and age, should be sent not later than May 20, 1947, to the Staff Office (reference ER/E425), London Passenger Transport Board, 55, Broadway, S.W.1.

REQUIRED—Assistant to Transport Officer of large Industrial Undertaking. Applicants should submit full particulars of qualifications, experience, and salary required, and should not be more than 35 years of age.—Box 100, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

FIFTY YEARS OF RAILWAY LIFE IN ENGLAND AND SCOTLAND. By Joseph Tatlow. Cloth. 8¼ in. by 7 in. 223 pp. Illustrated. 10*s*. *By post* 10*s*. 7*d*.

LONDON PASSENGER TRANSPORT BOARD.—Applications are invited for a Post in the Office of the Press & Publications Officer. Qualifications required are first-rate journalistic experience, interest in transport and industry, ability to collect facts and give a clear exposition of industrial, technical and engineering matters, accuracy, drive and organising ability. The post is a responsible one, offering considerable scope and interest to a keen young man prepared to overcome difficulties. Salary, £650-£700 per annum, according to ability and experience. Only candidates with fully satisfactory experience and qualifications on the above lines should apply. The successful candidate will be required to pass a medical examination and to serve satisfactorily a probationary period, upon completion of which membership of the Board's contributory superannuation fund is compulsory. Canvassing, either directly or indirectly, will disqualify. Applications, which should be typed, giving full particulars of education, business and other experience, present remuneration and age, should be sent not later than May 15, 1947, to the STAFF OFFICER (reference ER/E.426), LONDON PASSENGER TRANSPORT BOARD, 55, Broadway, S.W.1. Specimens of work, which will be returned, should be forwarded with applications. For acknowledgment enclose addressed envelope.

STEEL STRUCTURES purchased, dismantled and removed. Industrial steel structures re-built, re-roofed and renovated. Steel factory buildings dismantled, re-erected or adapted on other sites.—BELLMAN HANGARS LIMITED, Terminal House, Grosvenor Gardens, London, S.W.1. Sloane 5259.

BRITISH WORK ON PERSIAN RAILWAYS. The achievements and difficulties of the R.Es. during the 15 months in which they laid the foundation for effective aid to Russia. Reprinted from *The Railway Gazette*, February 2 and 16, 1945. *Price* 1*s*. *Post free* 1*s*. 2*d*.

THE FIRST PASSENGER RAILWAY. By Charles E. Lee. A history of the Swansea & Mumbles Railway, which extends over 136 years. Cloth. 8¼ in. by 5½ in. 91 pp. Illustrated. 5*s*. *By post* 5*s*. 3*d*.

THE CORONATION SCOT. New 4-6-2 locomotive and 9-coach trains built specially for working the L.M.S.R accelerated 6½-hour express service. Paper. 12 in. by 9 in. 16 pp. Folding plate. Illustrations and diagrams. 3*s*. *By post* 3*s*. 2*d*.

been applied to Stanton lighting columns most successfully. When incorporated with the Stanton welded-steel reinforcement frame, an exceptionally strong form of concrete column results; the columns are mechanically ground after spinning, and the density of the concrete is such that it will resist corrosive atmosphere without maintenance.

A Film of Excavators at Work.—An interesting sound film entitled "The Smith at Work" has been produced by Thomas Smith & Sons (Rodley) Limited, Leeds, demonstrating the full range of Smith excavators used for coal production, quarrying, road making, etc., together with various special machines, including a mobile crane at work in shipyards and on airfields. This film, which was directed by Mr. Jack Saward, has a commentary by Mr. Frank Phillips, and the background music is provided by the London Symphony Orchestra. Copies, which have been produced in 16 mm. size, are available for exhibition to engineering and allied associations, or, alternatively, the firm will be pleased to exhibit the film by the use of a portable sound projector.

Taltal Railway Co. Ltd.—There was an improvement of £5,323, or 14.9 per cent., in gross receipts of the Taltal Railway Co. Ltd. for the year ended June 30, 1946. The total figure of gross receipts was £41,023, as against £35,700 in the preceding year, and expenses rose from £54,249 to £59,541, the result being a loss on working of £18,518 as compared with £18,549. The total tonnage of goods carried was 62,909, against 51,301 in the previous year, and this accounted for the increase in gross receipts, for the number of passengers fell from 8,053 to 7,500, or 6·87 per cent. The greater volume of traffic was responsible in part for the advance in working expenses. The report states that gross receipts for the period from July 1 to October 31, 1946, showed an increase of £10,465.

Thos. W. Ward (Coal) Longbottom Limited.—Consequent on the nationalisation of the coal industry, the coal business of Thos. W. Ward Limited has been merged with that of Longbottom & Co. Ltd. The new company is known as Thos. W. Ward (Coal) Longbottom Limited with registered offices at Harvest Lane, Sheffield, 3. The amalgamated commercial and technical staffs of both companies remain unchanged. Two other branches of the Ward coal business, namely the Low Moor Coal Company, Bradford, and the Fishponds Coal Company, Wharf Pond, Fishponds, Bristol, are included in this amalgamation of interests. The board of the new company, under the Chairmanship of Mr. Arnold Carr, is made up of Mr. F. W. Robinson (Managing Director), Mr. W. Wood (General Manager), Mrs. Ella Longbottom, Mr. F. Johnson and Mr. H. L. Bull.

Supplementary Reserve Transportation Units.—The War Office has announced that the Supplementary Reserve is to be reconstituted, and that units of transportation, survey and postal services will be included. The detailed organisation and revised terms of service are under consideration and will be announced later.

Filey Holiday Camp Station.—The new railway station for the Butlin holiday camp at Filey, Yorkshire, will be opened by the Rt. Hon. Lord Middleton, M.C., on May 10. This event will mark the completion by the L.N.E.R. of a new branch line, double track throughout and just over a mile in length, built to serve the camp, and, as was reported in our issue of July 5, 1946, the new station has been provided with four platform lines, sidings, engine pits, and water columns. At the end of the platforms, which are 900 ft. long, a circulating area and station buildings have been erected, with a roadway and subway under the main Filey—Bridlington road.

Thomas Tilling Limited.—The total income for 1946 of £796,762 compared with £741,547 in the preceding year. Refunds of E.P.T. from subsidiary companies will provide a surplus estimated at not less than £200,000. A dividend of 10 per cent. is being paid on the ordinary shares as in the preceding year, and general reserve receives £150,000, as against £100,000. Sir J. Frederick Heaton, Chairman of the company, speaking at the annual meeting, said that the figures by themselves would justify an increase in dividend, and possibly, in this centenary year, an issue of bonus shares. They had before them, however, a Parliamentary Bill which, when fully implemented, might result in a substantial diminution in the company's net income, and in these circumstances it was felt to be in the proprietors' interests to declare the same rate of dividend as for many years past. The Chairman said that their main grievance was the harsh treatment received under the London Passenger Transport Act, for when the company's London bus business was forcibly acquired, the average annual net profits were £153,980. Annual income receivable on the stocks held in exchange had in each of the last two years amounted to £60,010. Under the new Bill, this figure would be reduced to £35,350, assuming interest at 2½ per cent. on the stock they would receive.

Tecalemit Limited.—Reviewing the company's activities during 1946, Mr. S. G. Gates, Chairman of Tecalemit Limited, said that demand for their products had expanded steadily throughout the year, but among the difficulties encountered in meeting this demand had been the lack of factory space. To provide for expansion, the company had issued 514,124 shares, which would produce about £550,000, and negotiations had been undertaken with the Plymouth City Council for the leasing of a factory site in Plymouth. Profit for the year was £120,081, as compared with £111,249. A final dividend of 14 per cent. was declared, making a total of 20 per cent. for the year, and this left a carry-forward of £69,324, as against £50,188 brought in.

Extension of Central Line Trains to Leytonstone.—When Central Line tube trains of London Transport are extended from Stratford to Leytonstone on Monday, May 5, the L.N.E.R. steam trains between Liverpool Street, Loughton, Epping, and Ongar will be withdrawn, and replaced by a new steam train service between Leytonstone and Ongar. The L.N.E.R. Woodford—Ilford connecting service also will be revised as from the same date. Central Line trains between Liverpool Street and Leytonstone will serve Bethnal Green, Mile End, Stratford, and Leyton at frequent intervals. To deal with parcels and passengers' luggage in advance for despatch by passenger train, the L.N.E.R. on May 1 opened parcels receiving offices adjoining Leyton and Leytonstone stations. These offices handle traffic "to be called for," and answer general parcels inquiries from 8 a.m. to 5.30 p.m. on weekdays, and 8 a.m. to 1.30 p.m. on Saturdays. Parcels will be collected from addresses in the Leyton, Leytonstone, and Snaresbrook districts, and special arrangements have been made for the delivery of traffic in these districts.

Forthcoming Meetings

May 10 (*Sat.*).—The Permanent Way Institution (Manchester & Liverpool Section), at Ditton Junction Depot, visit to Creosoting Depot, by permission of Mr. W. K. Wallace, C.B.E., M.Inst.C.E., Chief Engineer, L.M.S.R.

Railway Stock Market

There has been a firm undertone in stock markets, despite the London dock strike, the growing shortage of dollars for essential imports, and the effects of fuel and other shortages on the output of a wide range of companies. British Funds were inclined to dullness, and generally buying interest tended to dwindle; the exceptions again were those shares of industrial companies expected to benefit considerably from the withdrawal of E.P.T. assuming it is possible in existing conditions to maintain trading profits. There is little doubt that sentiment has been assisted by the high proportion of increases contained by recent dividend announcements. The increased payments are in most cases fully justified by higher profits, and a good part of the latter is being placed to reserves.

In many instances it would seem that recent gains in prices have discounted rather fully the possibility of higher dividends for the current year. According to some views, when prices generally have been adjusted to accord with prevailing estimates of the extent to which net profits of individual companies may benefit from the end of E.P.T., the tendency will be for day-to-day trends in industrial shares to be governed again by those in British Funds. For the time being gilt-edged have been adversely influenced by the disappointing results of the Derby and Newcastle conversions, and the indications are that gilt-edged are unlikely to develop renewed strength until Mr. Dalton is able to sustain his cheaper money policy by some new development.

Iron and steel shares have been firm, moving slightly higher where changed, with Babcock & Wilcox prominent pending the dividend announcement, and Pressed Steel higher on the increased payment. Sentiment was unaffected by reports that a Bill for nationalisation of iron and steel may be brought in this year, partly because of the Minister of Supply's statement that no legislation for taking over the steel industry would be introduced "during the present session" of Parliament.

Home rails have been firm, but business remained on moderate lines. The discussion in the House of Commons on the Report stage of the Transport Bill attracted considerable attention in the City and there was general criticism of the very limited time the Government is allowing for the Bill. The Government's reiteration of its rejection of an independent tribunal to decide compensation payable to stockholders had little influence on home railway stocks, which continue to be valued in the main on the "compensation" basis decided by the Government. It is realised in the market that, despite the strong arguments advanced, there is virtually no hope of the Government altering its plans.

The only inferences from the decision to treat railway stockholders in the matter of compensation on a different basis from shareholders in other nationalised concerns is that either the Government realised that an independent tribunal would inevitably decide on a more equitable compensation basis, or that the chief aim is to rush through nationalisation as quickly as possible because this suits Labour's political timetable and future plans. At all events, stockholders have to suffer a substantial fall in income, the extent of which was again underlined in the Transport Bill debate this week.

A point which emerged and appeared to be emphasised is that the Bill makes no definite stipulation as to the rate of interest to be carried by British Transport stock into which stockholders will have to transfer. It has been generally assumed the rate of interest will be 2½ per cent., and in all fairness to the hard-hit railway stockholders it should now be stated definitely whether this assumption is correct. The Government cannot have in mind a lower rate than 2½ per cent. with a view to using British Transport stock as a means for carrying Mr. Dalton's cheaper money policy a stage further.

Movements in home rails have been fractional and without any particular significance, business being moderate, despite their attractions as a short-term investment or as a means of acquiring an interest in British Funds. Argentine rails moved within narrow limits, but there was still considerable speculative activity in Brazilian rails on hopes attaching to the discussions regarding Brazil's sterling balances. Leopoldina fluctuated, but rallied to 22, the preference to 65 and the debentures to 81. San Paulo at 188 lost part of an earlier advance.

BRITISH AUTOMATIC CO. LTD.—The company's net profit for 1946 amounted to £15,891, an increase of £1,202, after providing £57,942, as against £54,996, for taxation. After providing for a dividend of 6 per cent. as in the previous year, £10,954 is carried forward, or £20 less than was brought in. The company is controlled by the Associated Automatic Machine Corporation, and the net profit of the group, after taxation, was £18,271, an increase of £2,421.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1945/6	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: Apr. 29, 1947
				£	£		£	£	£				
South & Central America	Antofagasta	834	19.4.47	45,620	+ 17,720	16	602,940	524,780	+ 78,160	Ord. Stk.	12	8¾	15
	Arg. N.E.	753	19.4.47	ps.329,200	+ps.15,200	42	ps.13,477,600	ps.12,418,900	+ps.1,058,700	"	10	5¾	15
	Bolivar	174	Mar., 1947	$111,635	— $12,317	13	$340,312	$356,403	— $16,091	6 p.c. Deb.	8½	5½	7½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	36
	B.A. Pacific	2,771	19.4.47	ps.2,850,000	+ps.443,000	42	ps.100,927,000	ps 95,900,000	+ps.5,027,000	Ord. Stk.	7	5	10
	B.A.G.S.	5,080	19.4.47	ps.3,809000	—ps.33,000	42	ps.153,347,000	ps.150,549,000	+ ps.2,798.000	Ord. Stk.	13¾	10¼	19
	B.A. Western...	1,924	19.4.47	ps.1,488,000	+ps.209,000	42	ps.55,377,000	ps.50,560,000	+ ps.4,817,000	"	12¾	9¼	28
	Cent. Argentine	3,700	19.4.47	ps.3,161,250	+ps.222,676	42	ps.135,706,130	ps.132,497,679	+ ps.3,208,451	"	9¾	7	20½
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅞	17½
	Cent. Uruguay	970	12.4.47	33,940	— 14,679	41	1,520,174	1,607,016	— 86,842	Ord. Stk.	7½	4	27½
	Costa Rica	262	Feb., 1947	30,030	+ 3,118	35	220,372	222,104	— 1,732	Stk.	16½	13	12½
	Dorada	70	Mar., 1947	29,200	+ 3,039	13	89,500	85,975	+ 3,525	1 Mt. Deb.	103	102	106½
	Entre Rios	808	19.4.47	ps.414,000	+ ps.3,400	42	ps.18,090,000	ps.17,854,200	+ ps.235,800	Ord. Stk.	7½	4½	8
	G.W. of Brazil	1,030	19.4.47	32,400	+ 8,800	16	591,200	490,500	+ 100,700	Ord. Stk.	30/-	23/6	95/-
	Inter. Ctl. Amer.	794	Mar., 1947	$1,264,115	+ $273,636	13	$3,591,376	$2,914,695	+ $676,681	—	—	—	—
	La Guaira	22¾	Mar., 1947	$130,008	+ $18,378	13	$355,075	$347,692	+ $7,383	5 p.c. Deb.	78	70	80½
	Leopoldina	1,9.8	12.4.47	68,503	+ 13,879	15	956,029	837,126	+ 118,903	Ord. Stk.	4½	3½	21½
	Mexican	483	31.5.46	ps.1,464,000	+ps.459,100	22	ps.7,706,200	ps.13,441,600	+ps.5,220,200	Ord. Stk.	½	½	1
	Midland Uruguay	319	Mar., 1947	15,947	— 57	39	149,262	164,290	— 15,028	—	—	—	—
	Nitrate	382	15.4.47	9,469	+ 901	15	58,795	65,770	— 6,975	Ord. Sh.	75/6	67/6	80/-
	N.W. of Uruguay	113	Mar., 1947	5,671	+ 994	39	49,155	49,373	— 218	—	—	—	—
	Paraguay Cent.	274	18.4.47	₲55,862	— ₲2,746	42	₲2,647,630	₲2,531,803	+ ₲115,827	Pr.Li.Stk.	79⅞	77	60½
	Peru Corp.	1,059	Mar., 1947	155,079	+ 36,693	39	1,356,614	1,252,842	+ 103,772	Pref.	10⅜	7⅜	11
	Salvador	100	Feb., 1947	c244,000	+ c11,000	35	c1,129,000	c1,080,000	+ c49,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60¾	50½	188½
	Taltal	156	Mar., 1947	2,925	— 605	39	37,630	28,020	+ 9,610	Ord. Sh.	17/-	10/6	22/6
	United of Havana	1,301	20.4.47	120,340	+ 28,905	42	2,678,827	2,467,579	+ 211,248	Ord. Stk.	3	1	4
	Uruguay Northern	73	Mar., 1947	1,307	— 247	39	11,386	15,768	— 4,382	—	—	—	—
Canada	Canadian National	23,535	Feb., 1947	7,767,000	+ 553,250	8	15,981,500	14,939,000	+ 1,042,500	—	—	—	—
	Canadian Pacific	17,037	21.4.47	1,431,000	+ 215,250	16	22,250,250	21,572,000	+ 679,250	Ord. Stk.	24	14¼	17½
Various	Barsi Light†	202	Jan., 1947	21,292	— 1,492	43	225,870	225,120	+ 750	Ord. Stk.	131	123	110xd
	Beira	204	Feb., 1947	90,568	+ 24,422	20	446,240	352,628	+ 93,612	—	—	—	—
	Egyptian Delta	607	28.2.47	13,965	+ 657	48	618,441	578,317	+ 40,124	Prf. Sh.	10	8¼	6½
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55¼	72½
	Mid. of W. Australia	277	Feb., 1947	15,318	— 540	34	130,669	134,118	— 3,449	Inc. Deb.	97½	85	65
	Nigeria	1,900	Feb., 1947	353,073	+ 2,154	46	4,193,473	3,153,983	+ 1,039,490	—	—	—	—
	Rhodesia	2,445	Feb., 1947	533,750	+ 67,632	20	2,761,173	2,476,064	+ 285,109	—	—	—	—
	South African	13,323	29.3.47	1,226,348	+ 212,476	52	60,522,019	53,090,465	+ 7,431,554	—	—	—	—
	Victoria	4,774	Dec., 1946	1,286,310	+ 308,438	26	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee